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... THE IRON AGE ...

ESTABLISHED 1855

AUGUST 18, 1938

Vol. 142, No. 7

You're in the Chain Gang Now!

IN some of our States they have "chain gangs." They use convict labor to do road work. I suppose there is some pay attached to this labor; convicts are usually given a few cents a day for their services.

In the old days, farmers and others who could not pay their taxes were allowed to "work them out" by doing road work. They had to put in so many days per year of "free" labor.

About the only difference between the two cases is that the convicts receive pay for their work and the farmers did not, aside from the fact that the latter worked without chains and without guns pointing at them.

There is something to be said for the old method of "working out" taxes. One good thing about it was that there was no hocus-pocus or concealment. The farmer knew exactly how many days of "free" labor he was supposed to give the Government. And it was, at most, only a few days per year.

That was in the "good old days" of 25 years ago, when our national debt was little more than one billion dollars. Today, things are different. Our national debt was jumped, by the World War, to over \$20 billions. The unbalanced budget for the last seven years will make it \$40 billions by this time next year.

Now debts mean taxes. And taxes must be paid, as President F. D. Roosevelt has said, "by the sweat of every man who labors."

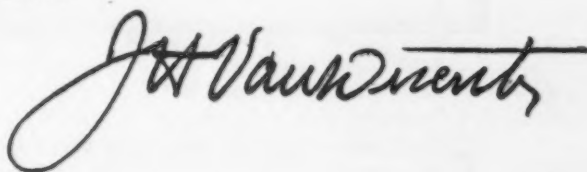
That is absolutely true. Labor must and will assume the lion's share of paying not only the present taxes, not only the deficit in Government now and for six previous years but labor must also pay off most of the national debt. Forty billion dollars! There is no other source from which to get the money.

Government can't take it from the incomes of the rich, because these now are being taxed up to 70 per cent. If Government took the whole 100 per cent, it would hardly be a "drop in the bucket."

According to the United States Department of Commerce, labor gets 84 per cent of our national income. Figure out for yourselves where the tax and the debt money is coming from!

Careful studies have revealed that the average wage earner, even though exempt from income tax, is now handing from 20 to 25 per cent of his income to the Government through concealed taxes. That may surprise you, but consider that you pay 6 cents tax or 40 per cent even on such an ordinary purchase as a 15-cent package of cigarettes.

A 25 per cent hidden tax rate is exactly the same thing as the conscription of your labor for three months out of each year. And before we get through, it may be six months. Six months for which you work without pay! When this fact becomes generally known to American labor, we are going to have an overwhelming demand for economy, a balanced budget and the abolition from public life of politicians who bait their vote hooks from the Federal pork barrel.



TRICKS OF THE TRADE

By PAUL R. RAMP

IN every trade there are tricks, call it craftsmanship if you will, that must occasionally be resorted to in order to overcome adverse plant conditions. This is particularly true in the foundry industry where the nature of the work puts a high premium on a knowledge of these tricks. In this article the author describes a number of foundry trade tricks that have been successfully utilized to produce sound castings in the face of apparently insurmountable obstacles.

o o o

THE degree of difficulty involved in producing a casting is usually measured by the size of the casting, the size of the foundry and the type of equipment available. Take,

for instance, the casting of a bridge block 60 x 60 x 12 in., weighing five and a half tons. This is a simple casting to mold, and in the average foundry would not present any unusual problems. However, in a small shop where the equipment is limited, casting this block becomes a difficult task.

A casting of this type has been made in a plant where the total melt was not over nine tons a day. In cast-

ing this block the plant was confronted with the problem of feeding the mold after it was poured in order to secure a solid casting. When this job was first attempted, it was poured early in the heat, but long before the metal in the large feeding head was solid, the heat was over and no additional feed iron was available.

Cast Iron Bars Used

To overcome this difficulty a number of cast iron bars were put into the mold, supported by cast iron chaplets, to lessen the amount of iron required to fill the mold. These bars were cast in open sand molds and tumbled before putting in the mold in order to remove the sand. Space was reserved for whatever feeding could be done and as long as liquid metal was available from the cupola the feeding head was kept filled. This

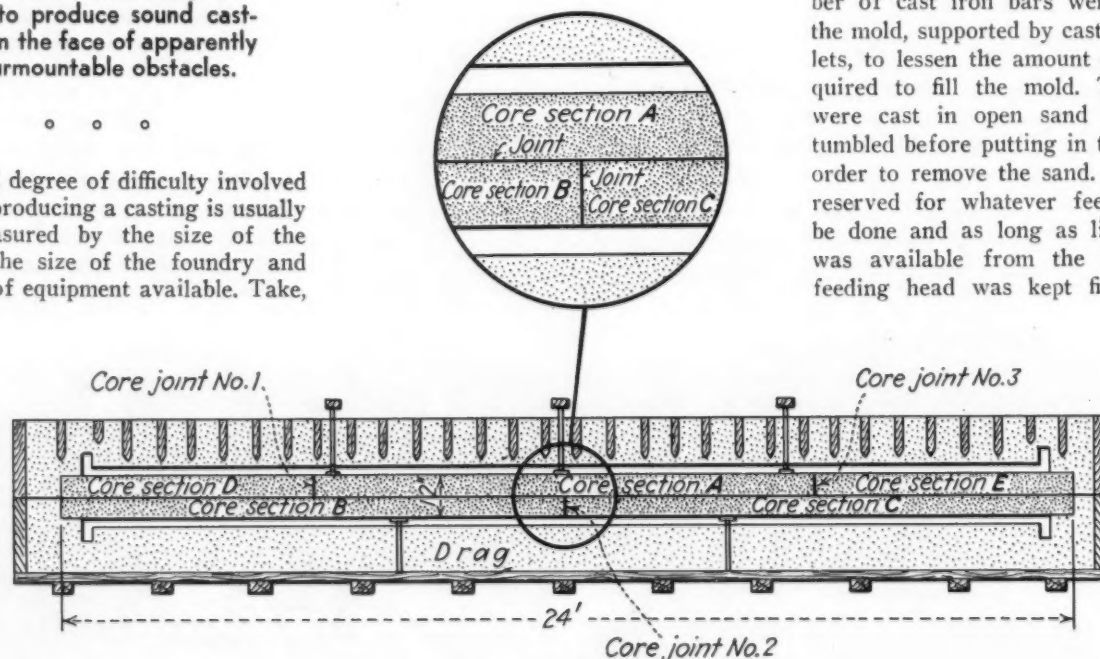
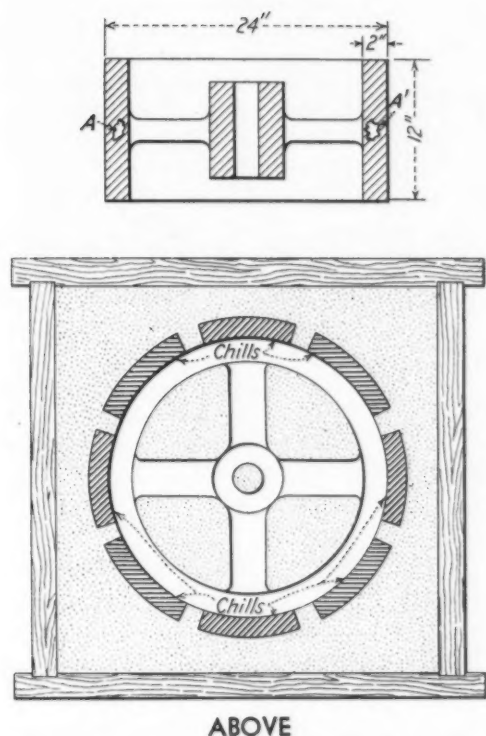


FIG. 1—Cross section of a mold showing method of splicing several short cores to produce one long core.



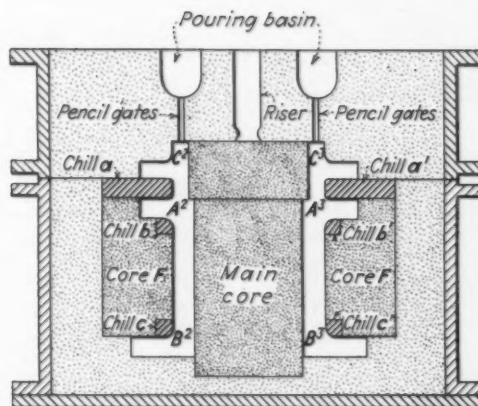
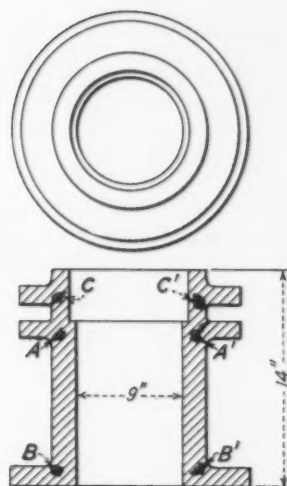
ABOVE

FIG. 2—Losses from shrink holes in gear castings can be greatly reduced by the use of chills, as shown in the lower drawing.

• • •

AT RIGHT

FIG. 3—Shrink holes at the flange joints of this alloy casting were eliminated by using chill blocks, as illustrated in the bottom drawing.



trick made it possible to produce this casting without shrinkage.

In another instance, a 22-ft. pipe, with a 12-in. inside diameter, was ordered from a small foundry. The customer furnished a full length pattern and a 12-ft. half core box. Casting this pipe would not have been a particularly difficult task, were it not for the fact that the customer specified that the inside of the pipe must be perfectly smooth *with no joints*. To produce this pipe with ordinary methods would require a 24-ft. core. The foundry had no 24-ft. core plate and the job did not warrant a sweep core box.

Cores Spliced

The trick resorted to produce the casting under these circumstances was a spliced core. Three half cores, 12 ft. long and two half cores 6 ft. long were first made. Then two of the 12-ft. sections were butted together (see fig. 1) and spliced by pasting and wiring the third 12-ft. section across the point where the first two cores joined.

Fig. 1 shows this procedure in detail. Cores D and E in the drawing are the 6-ft. lengths, while cores A, B and C are the 12-ft. lengths. Aside from a little trouble in handling, the core was a success and produced a smooth inside surface.

Preventing Shrink Holes in Gears

A bull gear for a planer is an important casting, and any defects uncovered when the teeth are cut is objectionable and usually causes the rejection of the casting. The upper drawing in Fig. 2 shows where shrink pockets (A and A') often occur in this type gear. Losses caused by these defects can be reduced by using a close grained metal with low phosphorus and low silicon. But a positive cure for these shrink holes is the use of chills as illustrated in the lower drawing in Fig. 10. This illustration shows the drag portion of a gear mold with sectional chills rammed against the face of the gear rim. It is not necessary that these chills be machined.

The use of chills in this manner not only prevents shrink holes at the junction of the arms, but also produces a close-grained, long-wearing metal.

Some foundrymen use these chills at the arm junction only, but this is objectionable because in that case the character of the metal where the chills are used will differ from the metal at the points where no chill is used. The thickness of the chills should be three-quarters the thickness of the rim, and the chills should be covered with shellac or a chill coating. For best results the gears should be poured from the hub with hot iron.

Casting Ni-Resist Pipe

The upper drawing in Fig. 3 is a special Ni-Resist casting similar to a heavy pipe. Little trouble would ordinarily be experienced in producing this casting if it were made of gray iron, but casting it out of Ni-Resist raised several problems. If molded in the regular way and poured with Ni-

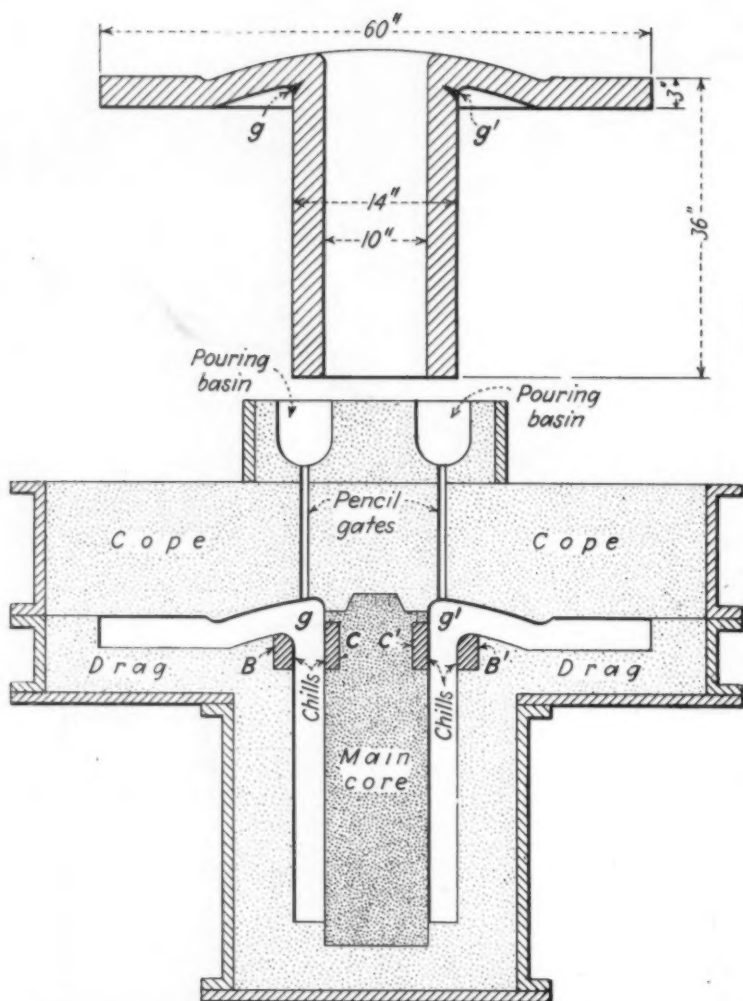


FIG. 4—Shrink holes that occurred at the flange joint on this 60-in. cylinder head were overcome by placing chills in the mold, as the lower drawing shows.

Resist there are liable to occur shrink holes and pulling away at A, A¹, and at B and B¹. After the casting has been poured defects may also develop at C and C¹.

The use of chills as shown in the lower drawing in Fig. 3 will often eliminate these defects. Chills marked b, b¹, c and c¹ are placed in the core F when the core is made. Chills a and a¹, consist of two half rings with sufficient taper to permit their easy removal from the casting after shake-out.

Pencil Gates Are Preferred

In order to keep the hot metal from burning into the chills, pencil gates are used. When this type of mold is gated at the bottom the chills are overheated and burned by the metal flowing over them while the mold is being filled. The use of pencil gates directs the metal in a manner to prevent the iron from coming in direct contact with the chills until the level

of the metal in the mold reaches the level of the chills.

The upper portion of Fig. 4 is a

cross section of a 60-in. cylinder head. When this casting is produced from an iron containing a high percentage of nickel and chromium shrinkage cracks often develop at G and G¹. Internal chills and heavy feed heads do not always eliminate these defects. However, the use of chills as shown in the lower half of Fig. 4 will usually clear up this trouble immediately. Sectional chills C and C¹ are rammed up in the main core and chills B and B¹ are rammed against the surface of the pattern.

The pencil gates shown in the drawing direct the metal past the chills while the lower portions of the mold are filling. The chills are rough castings coated with shellac or chill coating.

Cast Iron Shrouds Used

In making the heavy work block, shown in the mold in Fig. 5, considerable difficulty was experienced with the burning in of the bolt slot cores (A).

In order to insure a clean surface on the bolt slot side of the casting, the mold was cast with the slot side in the drag. This put excessive pressure on the slot cores (A) and in order to produce a slot free of sand, cast iron shrouds were provided for the cores, as shown at B, B¹, B², and B³. These shrouds were made in sections 12 in. long and were held in place by chaplets C, C¹, C² and C³.

The pouring gate was arranged so that the first metal would run through gates F and F¹. After the cores were covered with metal the balance of the metal flowed through gates E and E¹. The use of shrouds can also be used in producing large face plates.

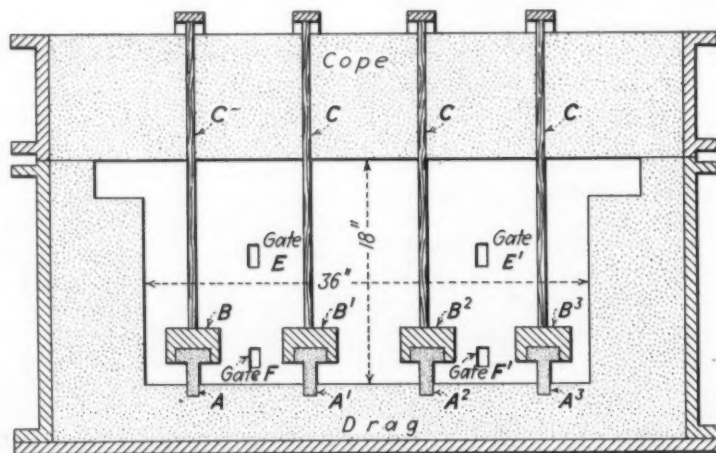


FIG. 5—The use of cast iron shrouds in casting this face plate prevented the slot cores A, A¹, A² and A³ from burning out before the iron in the mold solidified.

Pivoted Motor Base

Application

BY FRANCIS JURASCHEK
Consulting Editor, *The Iron Age*

CHAPTER 34 of a Series on the Economics of Industrial Power Transmission Methods and Equipment.

A BELT cannot transmit power without tension. Initial tension is necessary to give the belt continuous contact against the pulley faces (grip) so that pull may be exerted by the belt from one pulley to the other. It is one thing, however, to establish correct initial tension; it is another thing entirely to maintain the proper tension during all the variations of load conditions during operation, as well as to compensate for the stretch in the belt. The previous discussion on this subject (*The Economics of the Pivoted Motor Base*, in *THE IRON AGE* of July 28) covered briefly the theory of one of the most popular methods of maintaining correct belt tensions automatically during

the drive operation. There the basic principle of the pivoted motor base was stated to be automatic adjustment (within limits) of the pulley center distance, by the utilization of the motor weight, or of the motor weight plus the reaction torque of the motor, as a force counterbalancing momentary variations of stress in the belt.

In the pivoted motor base drive, the driven load at any moment determines the tensions required in the belt; the pivoted base automatically meets each tension requirement at the moment it is demanded. Two factors determine the applicability of the device to any drive problem:

1—The driving source must be a motor, connected to but one point of delivered power—the driven pulley of the drive system. There cannot be two applications of this delivered power from the same motor.

2—The variations in the load stress of the drive must not be greater than may be balanced completely either by the weight of the motor alone, or the

combination of the motor weight and motor reaction torque, according to the type of pivoted motor base being considered.

These limitations determine fairly conclusively the classes of drives to which the pivoted motor base is best adapted:

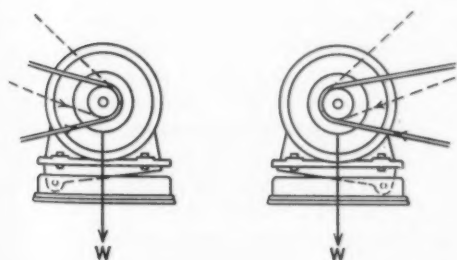
A—It is essentially a drive for medium length to very short center distances.

B—It is well adapted to the driving of pumps, fans, blowers, compressors and small generators or exciters.

C—It is well adapted to the driving of the main shaft of a group drive; especially where it is desired to hang the motor from the ceiling or the side wall.

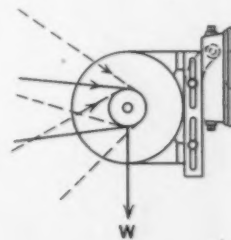
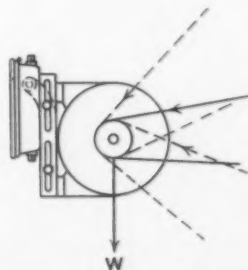
D—It is well adapted to the driving of many machine tools, wood-working tools, and various classes of process equipment such as mixers, agitators, dryers, etc., where shock loads are not great enough to require the use of a heavy flywheel.

E—It has been successfully used



AT LEFT
FIG. 1—Floor
mounting applica-
tions for Rockwood
type base.

AT RIGHT
FIG. 2—Wall
mounting applica-
tions for Rockwood
type base.



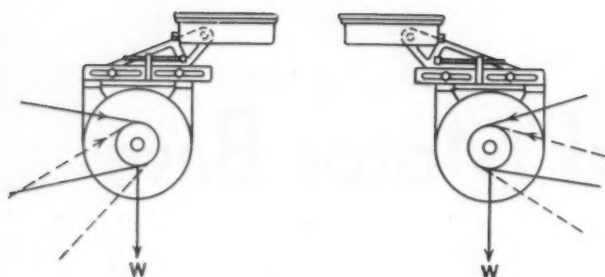


FIG. 3—Ceiling mounting applications for Rockwood type base.

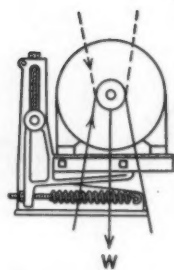


FIG. 4—Vertical drive application of special Rockwood type base.

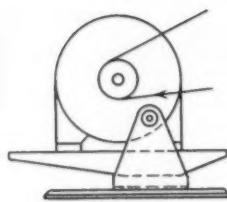
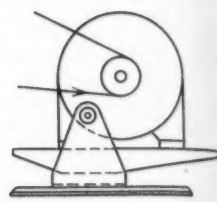


FIG. 5—Floor mounting applications of American Pulley type base.



for the driving of small to medium size punch presses and other similar equipment where intermittent heavy shock loads are well blanketed by the use of large flywheels.

Classes of drives for which the pivoted motor base is not so well adapted, or in which it does not yield any appreciable economy, may be listed as follows:

- a. Very heavy capacity drives with long center distances, where the load is fairly steady.
- b. Drives of any capacity where the load fluctuation is greater than may be balanced effectively by the action of the drive.
- c. Drives where the belt speed is

extremely low, where the center distances are extremely short, or where the pulley ratios are extremely high.

Application Problems

The most favorable results, from the standpoint of efficiency and economy, are obtained when the tight, or pulling side of the belt, comes on the side of the motor pulley nearest the pivot point. In some cases the drive will not work at all when the tight side of the belt is on the side of the motor pulley away from the pivot point; in all cases of this nature the drive does not work so well.

There are four cases of pivoted motor base location. In the first and most usual case, the base is mounted

on the floor with the belt horizontal or inclined to either side. In the second, the base is mounted on a side wall or a column with the belt horizontal or inclined to either side. In the third case the base is fixed to the ceiling with the belt horizontal or inclined to either side. The fourth case is one which has only been satisfactorily solved in recent years; the base is fixed on a bracket, a shelf, or a pedestal above the floor level with the belt driving vertically up or down. In the accompanying diagrams these four pivoted motor base locations are shown, first for the Rockwood type of base, and then for the American Pulley reaction-torque type of base.

Sometimes the conditions of use require the exercise of no little ingenuity to establish the pivoted base in such a location that the tight side of the belt will come on the most favorable side of the motor pulley. However, with the four methods of location as shown, it is almost always possible to design the drive to meet this requirement. Where it cannot be met, the drive may still be feasible if care is taken to establish the pivot point properly.

The problem of establishing the location of the pivot point to meet the conditions of any particular drive problem is not a difficult one. Pivoted motor base equipment manufacturers have to a large extent reduced the matter to a series of charts and simple directions, in the use of which the correct pivot point may be closely approximated, and then adjusted by the trial and error method. Or the location may be accurately computed by a method clearly demonstrated in an interesting paper entitled "The Pivoted-Motor Drive" by Dr. R. R. Tatnall and presented at a divisional meeting of the A. S. M. E. in mid-year, 1935. Or, finally, a simple graphic solution of the problem may be made, as suggested by Philip G. Rhoads in Dr. Tatnall's paper. Such a graphic solution eliminates a great deal of complicated mathematics, and may be worked out quickly and easily.

A Graphic Solution

With apologies to Dr. Tatnall, I shall show how the graphic method may be applied to an actual sketch of the drive, using his example for demonstration purposes. This is an interesting (and typical) problem, and has the advantage that it may be adapted to any of the four pivoted motor base drive positions enumerated above.

The conditions were these: A floor-mounted Rockwood type base was to be provided for a 25-hp. motor, compensator-started, carrying a 12-in. diameter pulley and driving a 45-in.

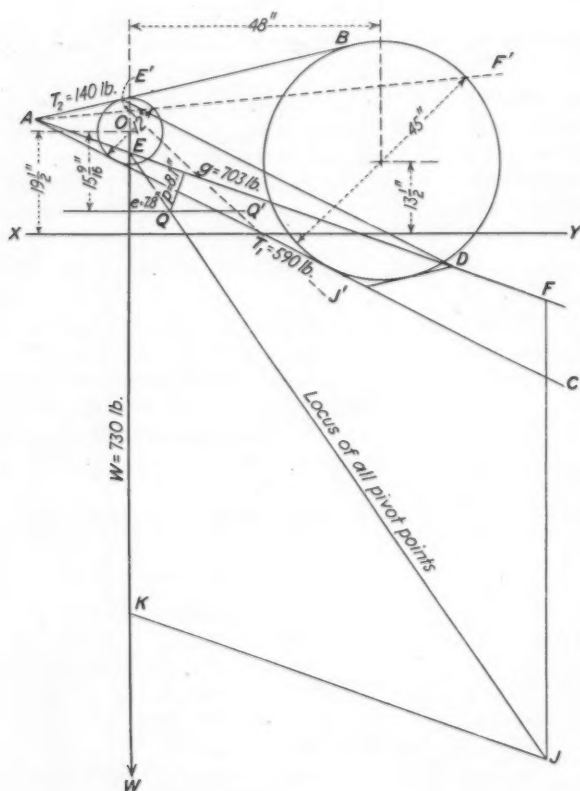


FIG. 8—Graphical solution of pivoted motor base problem. (See text.)

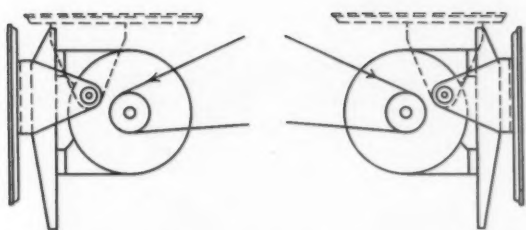


FIG. 6—Wall and ceiling mounting applications of American Pulley type base.

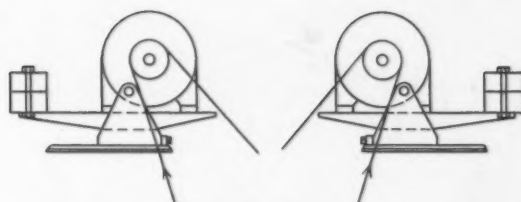


FIG. 7—Down-drive applications of American Pulley type base.

diameter pulley. Pulley shaft locations had been determined by construction requirements. The center of the motor pulley shaft was located $19\frac{1}{2}$ in. above the floor level, the center of the driven pulley shaft was located $13\frac{1}{2}$ in. above the floor level, and the horizontal distance between the two shaft centers was 48 in. The motor speed was taken at 865 revolutions per minute, and the motor weight at 730 lb. The height of the center of the motor shaft above the bottom of the motor feet was 11 in.; the height of the top of the pivoted base arms on which

It was desired to use a flat leather belt for the drive, of "high capacity" characteristics, and to maintain the tension ratio during the operation at approximately 4.2. Under these conditions the problem was to find the proper horizontal distance of the pivot point from the vertical line dropped through the center of the motor pulley shaft and representing the line of action of the motor weight.

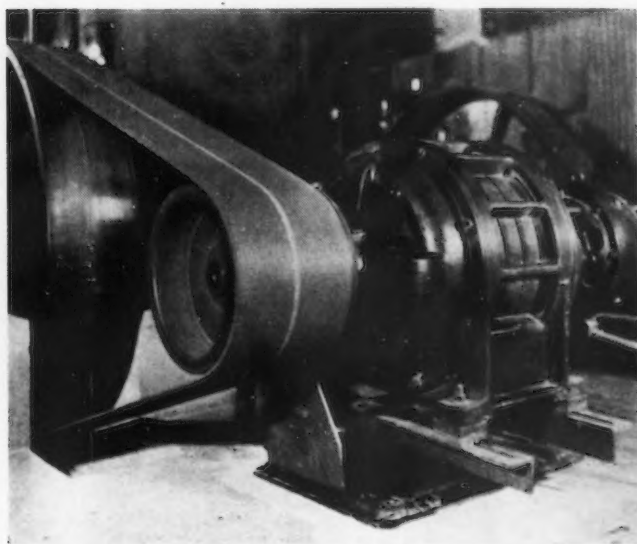
In the preceding article the tension relations between the tight and slack sides of the belt in operation were ex-

pressed as a series of mathematical formulas. These will be repeated here to make the proceeding clear:

$$\begin{aligned} T_1 - T_2 &= kP \\ \text{and } T_1/T_2 &= R \\ \text{whence } T_2 &= kP/(R - 1) \\ \text{and } T_1 &= RT_2 \end{aligned}$$

In the problem above, P , or the peak load anticipated, was taken to be the starting load, which for a compensator-started motor would be the rating multiplied by 1.5, or $25 \times 1.5 = 37.5$ hp. k is a constant obtained by divid-

(CONTINUED ON PAGE 42)



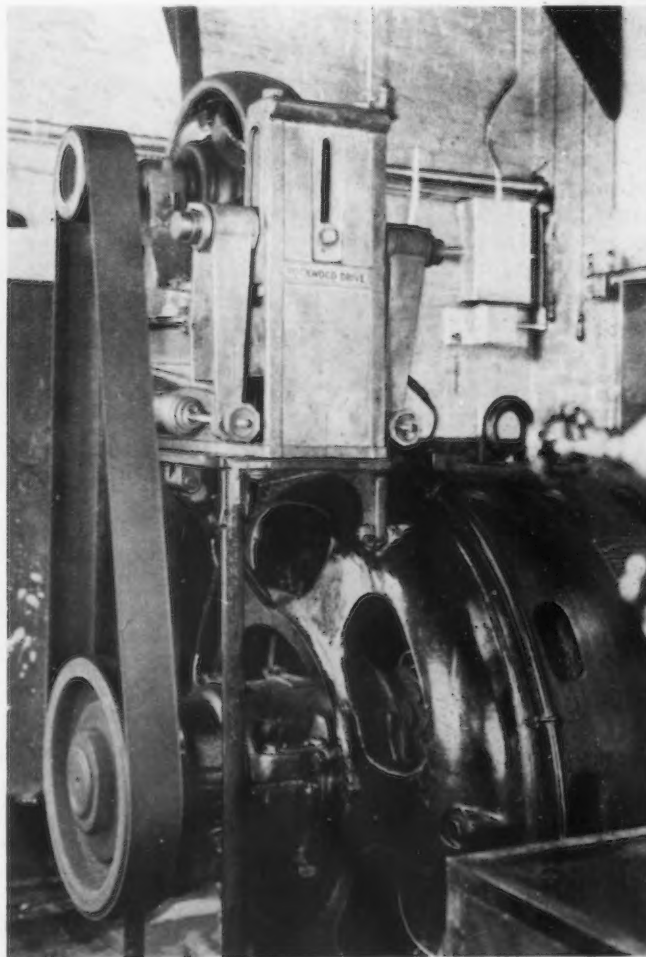
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FIG. 9—American Pulley type base carrying 125 hp. motor driving a compressor.

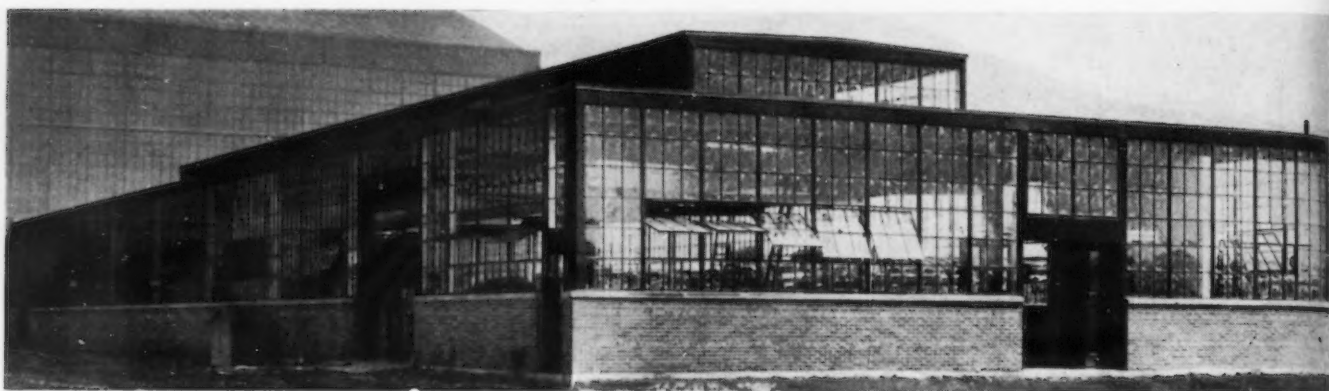
o o o

AT RIGHT

FIG. 10—Rockwood type base for vertical drive of 5 kw. exciter on 125 k.v.a. generator.



the motor was to be placed was $8\frac{1}{2}$ in. (These two distances, added together, gave the height of the center of the motor pulley shaft above the floor level $19\frac{1}{2}$ in.) The distance taken vertically in the pivoted base from the top of the movable arms on which the motor was to be placed, to the pivot point, was $49/16$ in.; consequently the vertical distance between the center of the motor pulley shaft and the pivot point was fixed at $159/16$ in.



Pontiac's New Apprentice School

PONTIAC division of the General Motors Corp. has recently established an apprentice training school which represents an investment, including building and equipment, of between \$250,000 and \$300,000. The fact that this amount of money has been spent for a school to accommodate a total enrollment of 50 students for a four-year course gives a fair idea of what this one large employer considers skilled mechanics to be worth.

Pontiac's new school is just fairly getting under way. Early last year

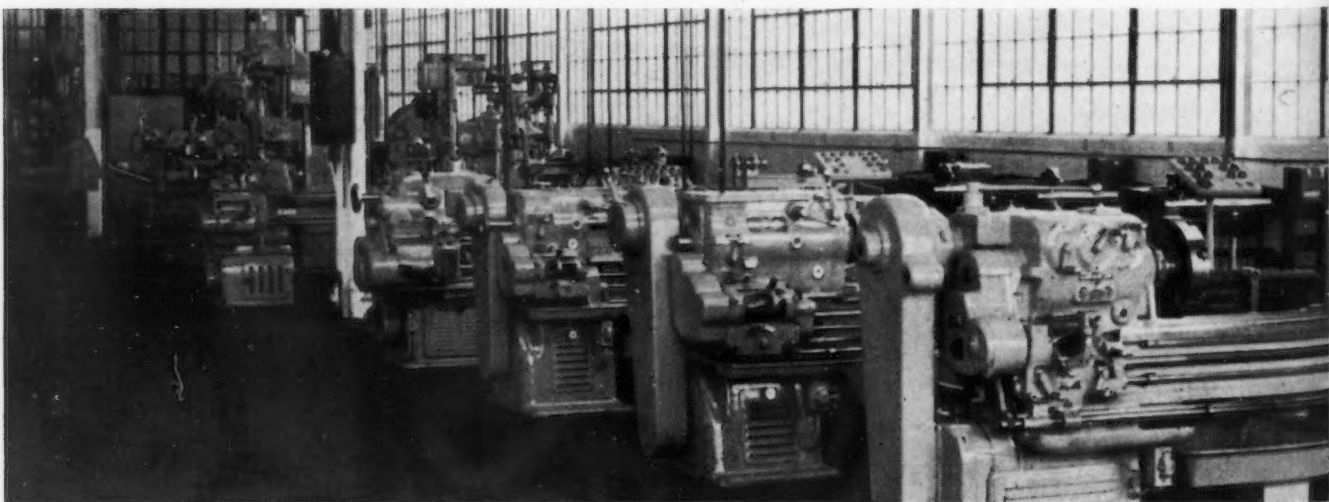
By FREDERICK A. VAN FLEET

• • •

the program was adopted and the company commissioned the Austin Co. to build a special building for school purposes. The one story structure, 120 x 62 ft., with something over 10,000 sq. ft. of floor space, is built of brick, steel, concrete and glass, although the casual observer would have to look closely to see any of the materials other than glass. Nearly

20,000 sq. ft. of glass were used in the sides and roof panels, the result being an unusual amount of light, which is further emphasized by the fact that all the machine tools are painted a light color, a plan generally followed in General Motors shops.

Actual operation of the school commenced in October. It was never contemplated that the full enrollment would be taken in at one time, the management preferring to select the students carefully and enroll a few at a time in order that operation might be continuous. The boys who finish





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LEARNING by "doing" is the essence of the philosophy which is back of Pontiac's apprentice training system.

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75c. an hr. for the final half year. In addition each student who finishes the course is given a cash bonus of \$200 and a diploma on graduation. Time lost for any reason must be made up, graduation being at the completion of the full 7280 hr. whether it has taken more or less than four years to get the hours in. Overtime work counts as straight time on the total of school hours, but the student who puts in overtime gets the same extra percentage of his pay as prevails in the plant generally.

When an apprentice starts in the school he is furnished with a simple standard set of tools, the actual cost of which is deducted in small amounts from his pay. After he has worked a year or so and given evidence of being a satisfactory student he is furnished, also at cost, with a full set of machinists' tools. His work schedule in the shop calls for rotation between different kinds of jobs. The schedule

originally set up as a guide, although it is subject to change, calls for one month in the tool crib, two in the shop office, seven on engine lathes, three on turret lathes, two on a shaper, one on a slotter, one on a jig borer, one on a boring mill, seven on milling machines, two on external grinding, one each on internal, surface and cutter grinding,

(CONTINUED ON
PAGE 53)

the course will graduate a few at a time into regular departments of the factory without disturbing the school program. Among the first students enrolled were a few boys who had been working as apprentices in different departments. Others came in from the outside, but the business recession slowed up the school just as it did the factory, so that by April 1 but 15 students, or less than a third of the contemplated enrollment, had been taken in.

Unlike some schools of the sort, Pontiac sets no definite scholastic standard for the students who are accepted. Sons of Pontiac employees are preferred. Next to them in point of desirability are boys of the local community whose fathers do not happen to be Pontiac employees. But whether the student is the son of an employee or not he must be one whose school record is good and whose recommendations prove satisfactory. Those who sign a recommendation for a boy are asked to make a full report on his school and personal record, including a grading on his health, industry, personality, integrity and his qualities of leadership and cooperation.

When a boy is accepted as a student a regular apprentice indenture is signed between the company and the boy and his parent or guardian, by the terms of which the boy enrolls for the full course of four years (eight periods of 910 hr. each) on the understanding that the first three months shall be a probationary period at the end of which the company may termi-



nate the agreement if it so desires. It is also provided in the agreement that the company may dismiss the student for good cause at any time and that the student may leave at any time on three days' notice.

For the first of the eight periods of 910 hr. the student is paid 40c. an hr. and that rate is raised 5c. an hr. for each period, bringing it to



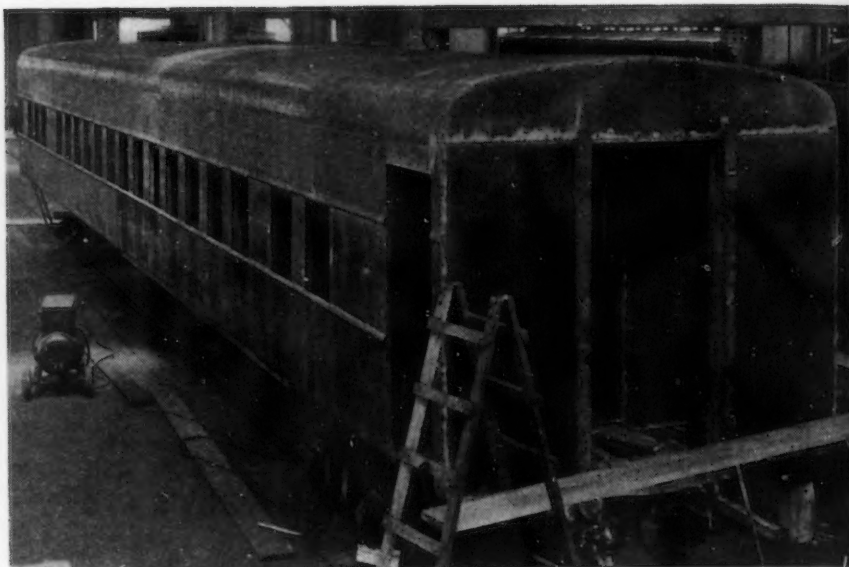
EXTERIOR of passenger coach under construction in the car shops of the Chicago, Milwaukee, St. Paul & Pacific Railroad Co., where a large number of standard and light-weight cars have been weld-fabricated. The other photos with this article were taken in the same shops.

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By H. S. CARD

Development Director, Electric Welding Section, National Electrical Manufacturers Association

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DURING the past three years arc welding has been increasingly used in new railroad car construction. In fact the extent of its use has aroused some speculation regarding the future trend in this field, for it has been observed that when welded construction has gained a real foothold in any major industry the period of transition to more or less universal acceptance has been relatively short.

The main advantage of the weld-fabricated railroad car has been in the direction of operating savings resulting from lighter car weights, rather than in lower construction cost. In the latter, however, the welded product compares favorably with the older cars and, with more experience in design and shop methods, should be progressively lower.

The operating savings have been

estimated as amounting to \$18 per ton per year on freight cars, an annual saving of \$90 per year (per car) when the weight is reduced by five tons. The dead weight tonnage of passenger cars has been cut more than 30 per cent, with corresponding savings. In this weight saving the use of the newer high strength steels has also been a factor, as well as the use of electric resistance welding for the assembly of thin sections.

Another advantage of the new cars is that they are more attractive to the

traveling public, which is learning rapidly that they give a new order of riding comfort, higher speeds and increased safety.

In other fields, too, the long range advantages of welded construction have been the savings resulting from a superior product; that it may also be lower in cost is an incidental advantage.

In the petroleum industry, for example, arc welded pressure vessels have made possible certain advances in refining methods which have

Arc Welding in Rail



THE details of a welded car roof are shown in this view.

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INTERIOR structure of light-weight welded passenger coach.

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clamation work. The shop set-up and personnel of all the large systems have been developed for repair welding operations; and neither the set-up nor the viewpoint are satisfactory for production welding requirements.

This is no reflection, of course, on the established welding organizations in railroad repair shops. In repair work the "margin of profit" is taken between the cost of making a weld and the cost of buying a new part. The repair job comes to the welder because something is either worn or broken. He welds the fracture, wherever it happens to be, not where he would like to have it, and he has a wide profit margin to work on as he prepares to make the best of a bad situation. In contrast, the welder on production has the smaller "margin of profit" represented by the difference in cost of unit payload-carrying capacity through welded construction and the cost of the same unit when fabricated some other way. Theoretically the work is laid out to facilitate economies in assembly, and since each piece is identical with the preceding one, no time is lost in making adjustments to compensate for changing conditions. A satisfactory procedure having once been established, it becomes routine and a uniform result can be expected.

It can be taken for granted that a
(CONTINUED ON PAGE 43)

Railroad Car Construction

brought about a 30 per cent reduction in gasoline prices (exclusive of tax) in the last 10 years. Also they have enabled that industry to conserve more crude petroleum than it actually takes from the ground under present methods of operating, besides bringing down the cost of pipe line construction to a level that makes it profitable to take natural gas hundreds of miles to the market instead of wasting it.

In the power industry, welded construction has increased plant efficiency by permitting temperatures and pres-

ures to be boosted to levels unheard of 10 years ago. Diesel engines have been reduced in weight without sacrifice of strength or power and as a result have become far more acceptable for transportation use.

In the railroad car construction field, the wider application of welding would be hastened, perhaps, by a new attitude toward the process.

Electric arc welding has been extensively employed by the railroads for at least a quarter of a century. But its use has been largely in re-

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ASSEMBLING the ends, bolster and center sill of a hopper car in the car shops of the Milwaukee Road.

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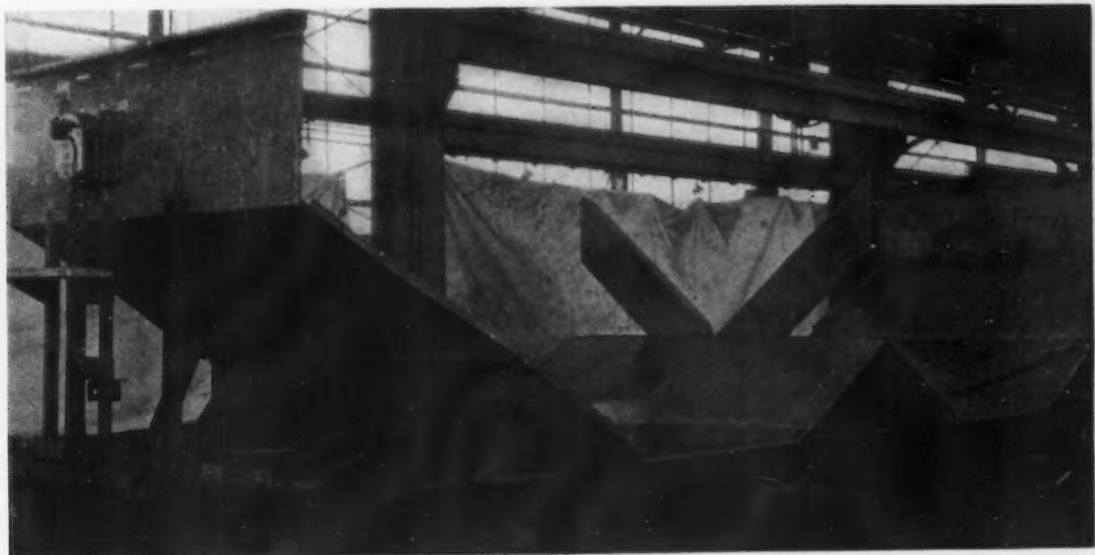
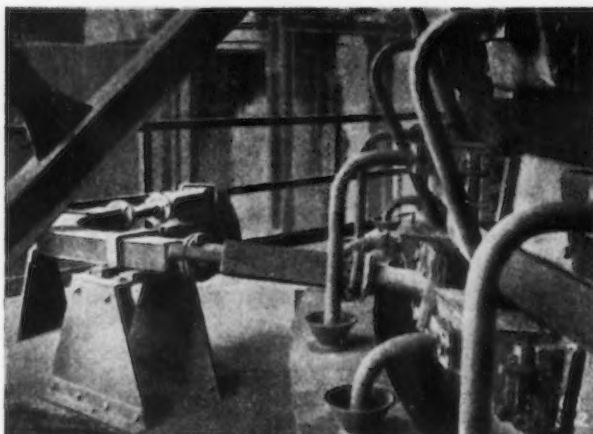


FIG. 2—Dust blowing nozzle on the furnace. The blowing nozzle with the cleaning branch closed by a cap nut is seen in the center. To the right are the cooling boxes, hoops, cooling water pipes and water trough.



Utilizing Blast Furnace Throat Dust

BECAUSE of Germany's need to completely utilize all available ore, there have been many attempts there to completely convert the dust that accumulates in the course of the blast furnace process. In the first attempts to smelt dust and fine ores, which took place quite a long time ago, the dust, after being well soaked, was charged in the same way as a normal mixture. However, during the charging process, the major portion sifted out and was entrained by the ascending gas current and thus withdrawn from the reducing process. The dust passed through the down-comers into the gas pipes, and, owing to the excess dust content, the gas cleaning apparatus was considerably overloaded. Thus, this method was very soon abandoned.

Attention then turned to sintering or even briquetting the dust, then charging in the normal manner. But here again, the handling operations between the dust treatment and the furnace broke up the dust, the final results being not a great deal unlike those resulting from charging the moist dust.

According to an article in *Demag News* describing a new method of handling this dust, the economic advantages of recharging dust are not only appreciable with soft fine ores but also can be demonstrated when the

furnace is operating on very hard ores, agglomerate and hard coke.

The accumulation of ferri-ferous dust varies a great deal at different plants, where the values are between 4 and 8 per cent and in some cases even as much as 10 per cent of the mixture charged, whereas the metal content of the dust varies from 30 to 40 per cent. According to *Demag*, the Heskamp process of blowing the throat dust is the cheapest and best means of reintroducing the dust to the smelting process. There are practically no transport charges to be met, as the only dust to be moved and charged with the normal mixture is the coarse, screened dust of more than 0.4 in. grain, which would cause trouble in the blowing pipes. The remainder of the dust is blown into the furnace.

In a recent German installation, shown in Fig. 1, the dust laden throat gas passes through a dust arrester, then through a cyclone and finally through a zig-zag pipe to a final purifier, after which the gas is passed on to the different points where it is consumed. It was found that 68 per cent of the total dust is precipitated in the dust catcher, and 65.5 per cent of the remaining dust is picked up by the cyclone. The total efficiency of the primary gas purifier is 89 per cent. The temperature at the throat is between 480 and 570 deg. F., while the

temperature in the cyclone is between 480 and 500 deg. F.

Up until the present time it was only the dust from the dust arrester that had been blown into the furnace, i.e., only 68 per cent less the coarse dust. However, in the case of this new plant, the fine dust from the cyclones and even from the dirty gas pipe also is blown into the furnace.

The dust from the dust arrester is passed over a sieve, when the grains under 0.2 in. fall through into the dust receptacle, while the larger grains, from 0.2 in. upwards, that are kept back, are drawn off and added to the normal furnace charge. The dust that has accumulated in the receptacle, about 32 to 40 per cent of the total amount, is blown into the furnace. The current of gas under pressure goes through the blowing pipe to the blast furnace. The receptacle is put under pressure through a by-pass pipe and the bell-valve pressed on to its seat. The dust passes into the pipe, is entrained by the gas at the blowing branch and blown into the furnace.

The blowing pipe leading to the blast furnace consists of 2-in. wrought iron pipe. At the bends the pipe is ironclad in order to prevent heavy wear by the throat dust. Bends are to be avoided as much as is possible when laying the pipe. The blowing nozzle is ironclad, and has further-

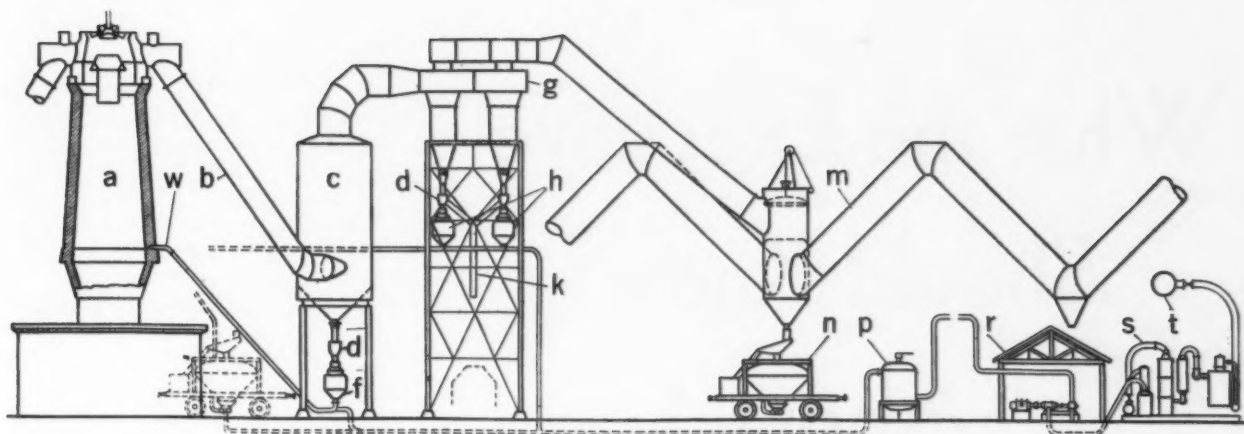


FIG. 1—Installation for blowing throat dust. The more distant dust is transferred to the blowing point in a special dust car.

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|-----------------------|------------------------------------|--------------------------|-----------------------|
| a = Blast furnace. | d = Jigger. | k = Dust discharge pipe. | r = Compressor plant. |
| b = Downcomer. | f = Dust receptacle. | m = Zig-zag pipe. | s = Gas purifier. |
| c = Dust arrester. | g = Cyclone. | n = Dust wagon. | t = Clean gas pipe. |
| h = Dust receptacles. | p = Pressure equalizing reservoir. | | |

more a second branch, through which a rod can be pushed to clear the nozzle in the event of it being choked. Its opening is closed by a cap nut. Generally speaking, with a nozzle width of 0.98 to 1.18 in., the amount of dust that can be blown per nozzle in 24 hr. is 90 tons, when the average consumption of gas per ton of dust is 3530 cu. ft. At the blast furnace plant under review blowing is done in such a manner that each nozzle is out of action at least just as long as it has been in action. This method of blowing prevents any disturbance of the working of the furnace, so that incrustations as a result of the blowing are a thing unknown. The values quoted depend, however, entirely on the local conditions, such as the length of the pipes, the bends, the fineness of the dust, etc. The dust must be perfectly dry, otherwise it will cake. The design of the nozzles and their position on the furnace are shown in Fig. 2.

Opinions differ as to which is the

most favorable place on the blast furnace for blowing in the dust. The case is really that there is no general rule and the most suitable place must be found through tests carried out with due regard to the local conditions. It is necessary that they be a sufficient distance away from the throat, otherwise, as already mentioned, the rising gas current will carry the major portion of the dust with it into the pipes and thus increase the dust content of the gas.

Great difficulty has been experienced in finding a suitable carrier for the dust. Heskamp was the first to use the non-oxidizing blast furnace gas. This gas has the advantage of being able to be kept in constant circulation with practically no losses, and only slight outlay is incurred for cleaning and compressing it, and the providing of the gas entails no cost whatever.

The dust from the cyclones also is resmelted in a similar manner, except that in this case, owing to the dust being so fine that it would remain

lying on a stationary sieve, a jigger must be used to separate the coarse pieces.

In order to be able to use in the same way the dust from the points farther away from the furnace where it accumulates in the dirty gas pipe, in this case the zig-zag pipe, a wagon carrying a dust receptacle is used. This wagon runs underneath the pipes, picks up the dust and then runs along to the blowing point.

The costs of blowing are very low. In an article in *Stahl und Eisen*, 1931, it is stated that the average cost of blowing one ton of dust is 32c. When one compares with this just the costs of transport alone in the other dressing processes, which are always over 32c. per ton, it is then that the great economical advantage of the blowing process becomes evident.

Even fine ores can be blown into the blast furnace in the same way as dust after having been prepared for the blowing process by grinding and screening.

Find Method for Determining Boron in Steel, Cast Iron

THE increasing use of boron in the manufacture of metallurgical products, both as a scavenger and as an alloying constituent, has made desirable an accurate method for its determination when present in small amounts, according to the National Bureau of Standards, Department of Commerce.

A method for this determination has

been developed by John L. Hague and Harry A. Bright of the Chemistry Division, National Bureau of Standards. The procedure calls for solution of the sample in hydrochloric acid followed by oxidation with hydrogen peroxide, distillation of methyl borate (Chapin's methods), and titration of boric acid with sodium hydroxide in the presence of mannite, it was announced.

Selenium and tellurium do not in-

terfere, but germanium, a very minor constituent rarely present in ferrous alloys, causes small plus errors. A special procedure for examining any acid-insoluble residue for boron has been worked out. Data obtained by applying the method to a number of ferrous alloys show that results accurate to —0.002 per cent can be expected with irons and steels containing from 0.005 to 0.1 per cent of boron, according to the Commerce Department.

What the Executive Should Know About Inventory Control—II

By EUGENE CALDWELL
*General Manager
Wrought Washer Mfg. Co.
Milwaukee*

MAXIMUM and minimum figures cannot remain static. In fact if effective inventory control is to be accomplished, these values must fluctuate up and down with the volume of business being done. However, the actual maximum and minimum figures recorded on the cards should be only for normal business. For example suppose it was determined that adequate service to customers required maintaining stocks for each item equivalent to one month's shipments of the unit. Then suppose further that 10,000 units per month were considered normal business. The minimum figure to record on the cards would be the shipments of that item when the business had a normal volume of 10,000 units.

When production falls to 9000 units per month the figure shown on the card is no longer taken as the minimum but 90 per cent of that figure is used. If production falls to 5000 units, 50 per cent of the minimum figure on the card becomes the current minimum, and if production increases above normal to 12,000 units, then 120

per cent of the normal minimum figure should be used.

If adequate inventory control is to be maintained, all replenishment of stock must be in the hands of the inventory control department. As particular items become depleted and fall below the minimum, the inventory department should originate an order on the shop or on the purchasing department calling for the production of the required items. When this is done the inventory control department has performed its function (except for following up the requisition), and the problem from then on is one of production control. The production department must fit these orders for stock into the regular schedule along with the manufacture of goods special to customer's orders. The orders for stock must of course be held until material, men, and machines are available.

Orders Must Be Checked

Obviously if hopes of moving the excess items are ever to be realized, every order received must be checked

to determine if the item is in stock. Perhaps the first thing to do is to make a sharp distinction between customers' orders calling for goods in stock as against those which must be made up special. In most cases it is desirable to have two separate order forms for the reason that generally more copies of the order are needed when the item must be made up special in the shop than when shipped direct from stock. Then too the two types of orders follow entirely separate routes, the stock orders going directly to the shipping warehouse while the special orders must go to the production department. Moreover some concerns make no acknowledgment of orders shipped immediately from stock for the reason that the invoice would reach the customer about the same time as the acknowledgment. This means an extra acknowledgment copy must be made of the special orders. Having the two types of orders on characteristically different forms aids in making the correct routing for each class.

As soon as the customer's order is interpreted so the goods can be thoroughly identified, the customer's order itself should be routed to the inventory control department, when the records are checked to determine if in stock. At this point the two types of orders are separated, and part sent back to the stock order department and the remainder sent to the special order department for typing on their respective forms. (Stock order forms should

be used even for the excess items in stock.)

Analyzing Special Orders

Although the inventory record sheets will give a complete analysis of the movement of all items in stock, no account is taken in this record of changing demands for items never carried in stock. In order to provide for adding new items to stock as demands change, analyses of the special orders must be made.

Frequently this is a job well adapted to tabulating machine equipment. Such an analysis is generally made at the end of the year, a card being punched for each item on every special order filled during the year, with the size, style number, order number, and such other identifying information as is necessary. Then the automatic sorting equipment is set to place the cards in exact sequence as to size or order number.

In this way the recurring sizes shipped during the year can be picked out. The entire year's shipments can be tabulated or listed automatically in correct size sequence, although if only the recurring sizes are desired in the tabulation, a small job of hand sorting is necessary.

Unless tabulating equipment is needed in other phases of the business, such as for payroll, the installation of such equipment can rarely be justified from the standpoint of order analysis alone. In most locations, however, the tabulating machine manufacturers now have service departments where this work can be done for you. In other words copies of all the orders for the year can be sent down to such a department, the entire analysis made there, and the answer desired returned with the orders, or any compromise between this and doing all the work yourself can be used. For example the cards can be punched in your own office and then sent to the service department for sorting and tabulating.

"Hand" Analyzing

Another method of analyzing shipments which is desirable in some situations is to do by hand virtually what is done automatically with tabulating equipment. An extra statistical copy is run off of each item on each special order. In many cases one of the copies used for manufacturing purposes in the plant can be returned to the office after the order has been completed and the order copy served its purpose. The statistical copy is sorted daily into predetermined size classes. As

these copies accumulate throughout the year, they can be referred to currently for comparative pricing information or for any other purpose where reference to similar sizes would be of value.

At the end of the year these size groups are resorted within themselves and refined into exact size sequence. Then the information desired, such as recurring sizes, can be listed, and the copies destroyed to make room for

THIS is the second and concluding part of Mr. Caldwell's presentation on the subject of inventory control. The first part appeared in The Iron Age of Aug. 11, on page 22.

Inventory control is becoming more and more important from the management standpoint because of the fluctuations in volume of business and the danger of excessive inventories caused by shrinkage of demand.

the new year. However, if any other information is desired, there is nothing to prevent the copies' being resorted into a new sequence before destroying. Much valuable information for the sales department can be obtained by various analyses of special orders.

If the inventory control is to function properly, the inventory department must have complete charge of placing new items in stock. There will be only occasional exceptions to the rule that items are placed in stock entirely dependent upon demonstrated movements within a prescribed period. In few cases, of course, the arguments of the sales department of providing exceptional service to customers will prevail. But in general inventories cannot be held within bounds unless these limitations are strictly adhered to.

Cost of New Item

It should be remembered that the cost of placing a new item in stock includes not only the interest on the investment involved but also the rent on the space occupied, cost of keeping the inventory records in connection with the item, and the possibility of loss because of a cessation in demand

for the item. Balanced against these costs must be weighed the factors of better service to customers and in many cases lower production costs because of longer runs of the item and the elimination of set up time for many small orders.

The required number of shipments per year in order to justify a new item's being placed in stock should be placed higher than the requirement for an item already in stock to maintain its status as standard stock. For example if two shipments per year has been set as necessary to prevent a stock item from being classified as excess stock, three shipments per year should be demanded before a new item is placed in stock for the first time.

Conservative accounting requires that inventory values never be overstated. Whenever it is possible that there will no longer be a demand for an item carried in stock, it should be reduced to scrap value or at least to salable value in the books even though the items are not actually scrapped physically. A good guide to use for this is the same yardstick set up for determining excess or obsolete items. In other words and as a general rule all excess and obsolete items in stock should be carried on the books at scrap values or at the value for which they can readily be disposed of. The policy of actually scrapping these items physically will have to be determined by each individual company, being strongly influenced by the amount of warehouse space available and the likelihood of ever moving the item again.

Raw Stores and Supplies

Although most of the references so far in this article have been to finished goods inventory, the same identical system can be applied to raw stores and to supplies. Instead of analyzing orders to justify placing new items in stock, however, the analysis must be made of purchase orders in the case of raw materials and supplies.

After the inventory control system is set up, its efficiency can be measured by certain operating ratios. The turnover of total inventories is determined by dividing the cost of sales by the inventory. In some cases the net sales is used instead of cost of sales, although the latter gives the only true picture of inventory turnover. This ratio can be expressed in "times," that is, five times would indicate the inventory was turned over five times

during the year (assuming cost of sales or net sales figures for the year were used). Another way to express the ratio is in per cent, 500 per cent being equivalent to a turnover of five times. Still another method is to express turnover in dollars, "\$5.00" indicating there has been \$5.00 of sales for each \$1.00 of inventory.

The turnover of finished goods can be obtained by dividing cost of sales (net sales second choice) by the inventory of finished goods. Moreover the turnover of raw materials can be obtained by dividing the cost of raw materials used in manufacturing by the raw material inventory. Unless a complete cost system is in force the cost of raw materials issued to the shop may be difficult to obtain. In the absence of this figure the raw material

purchases for the year can be used provided there has been added or subtracted the variation in raw material inventory at the beginning of the year as contrasted with the end of the year.

These inventory turnovers should be compared with the same ratio for the period before the inventory control was put into operation. The ratio should also be compared with ratios in other companies and if the figure is available with the ratio for the entire industry of which your company is a part.

Another important inventory ratio is the per cent of working capital represented by inventory, found by dividing the inventory by current assets minus current liabilities. Dun and Bradstreet consider this ratio so im-

portant that they state extreme care should be exercised if the inventory exceeds 66 2/3 per cent of the net working capital for firms with tangible net worth between \$50,000 and \$250,000 or exceeding 75 per cent where net worth is greater than \$250,000.

The percentage of inventory covered by current debt should also be watched carefully (obtained by dividing current liabilities by the inventory). If this ratio is unduly high, the need of additional permanent capital may be indicated.

The amount of merchandise on hand can be controlled more readily than any other item in the financial statement. It should be kept well balanced and should be constantly watched.

Pivoted Motor Base Applications

(CONTINUED FROM PAGE 33)

ing 33,000 (the number of ft.-lb. in a horsepower) by the belt speed in feet per minute; or, more simply, 126,000 divided by the product of the diameter of the driving pulley in inches and the speed in revolutions per minute of the driving pulley. In this case the value would be

$$126,000 / (12 \times 865) = \text{approximately } 12$$

$$\text{Then } T_1 - T_2 = 12 \times 37.5 = 450 \text{ lb.}$$

$$T_1/T_2 = 12 \times 37.5 / (4.2 - 1.0) \\ = 140 \text{ lb., and } T_1 = 4.2 \times 140 = 590 \text{ lb.}$$

$$(\text{As a check, } 590 - 140 = 450)$$

To any convenient scale, lay out the pulleys in position with respect to the floor level XY (Fig. 8). Connect the pulleys by lines indicating the belt, and produce those lines until they intersect at A. On line AB lay off to scale T_1 as 140 lb., and on line AC lay off T_2 as 590 lb. Construct the parallelogram of forces and draw the resultant g as the diagonal line AD. By measurement this will be found to be 703 lb.

From O, the center of the motor pulley shaft, drop a vertical line representing the line of action of the motor weight W. Where the line crosses the resultant g , mark the point E. On the line AD produced lay off from point E toward the right, a distance by scale equivalent to the resultant g , or 703 lb. On the line OW lay off similarly to scale a distance equivalent to the weight of the

motor, or 703 lb. Construct a second parallelogram of forces of EF and EK, and draw the resultant EJ. Then all locations of the pivot point will lie along this line EJ to satisfy the conditions of the problem.

But one factor in the location of this pivot point has already been established; the vertical distance below the center of the motor pulley shaft O. Draw a horizontal line of indefinite length parallel to the floor line at this distance away from O (159/16 in.). Where this line intersects EJ will be found the correct pivot point location, Q. By measurement on the sketch it is found that this point Q lies 7.8 in. to the right of the line OW.

As a check, the moment of the resultant g about Q should equal the moment of the motor weight W about Q. Draw a perpendicular from the resultant g to Q and measure its length. It should be 8.1 in. Then

$$703 \text{ lb.} \times 8.1 \text{ in.} = 5,694.3 \text{ in.-lb.}$$

$$730 \text{ lb.} \times 7.8 \text{ in.} = 5,694.0 \text{ in.-lb.}$$

The distance h , taken here as 159/16 in., may vary according to the construction of the motor and the design of the pivoted base. Small values of h will cause the pivot point to approach closer to E, and larger values of h will cause the pivot point to be located farther away from E. Any position of Q as thus determined will give the desired tension ratio at the

peak load, but when Q is close to E the tensions will vary more with the load than when Q is farther from E. The position of Q for any value of h is found on the line EJ by merely drawing a line perpendicular to the motor weight line OW at the proper distance from O, and noting its point of intersection on EJ.

There are practical limits to the location of Q. If a negative value of e is obtained (the pivot point being above the point E on the line EJ produced, and e being measured to the far side of the line OW from the driven pulley), the motor will fall over toward the driven shaft. The maximum value of e is limited by the length of the movable arms of the pivoted base.

The above problem has been graphically solved on the assumption that the tight side of the belt will be on the side of the motor pulley nearest the pivot point. If the opposite condition should prevail (that is, the tight side of the belt be the top strand, and the slack side the lower strand), the resultant g would be as indicated by the dotted line AF', which intersects OW produced, at E'. The locus of all pivot points will then be the line E'J'; and Q', the actual pivot point to meet the design of the motor and base under consideration, will be at the intersection of this line E'J' and the horizontal line as drawn before at the determined distance below O. By

measurement on the sketch, Q' is found to be located in the above example 19 in. to the right of the vertical OW.

Dr. Tatnall sums up his useful discussion by saying "... the pivoted-motor drive is not a cure for all ills, nor is it advisable in all cases, but it is an exceedingly useful device with the great advantage that the engineer can predict in advance of installation whether a given design will work or not." If he finds that the given design will not work, the very act of laying out the stress-reactions as in the above example will usually give him a clue to a satisfactory solution of the problem.

Essentially the approach to the so-

lution of any pivoted motor drive problem is a matter of determining two things: first, a suitable value for the tension ratio, and second, the determination of a location of the pivot point which will produce this ratio in operation. The tension ratio will of course vary as the coefficient of friction between the belt and the pulleys varies, and it likewise depends upon the angle of contact between the belt and the smaller pulley. Proper values for these factors may be had by consulting belting tables. Once such a ratio has been satisfactorily worked out, the second phase of the problem (locating the pivot point) may always be solved quickly and easily by graphic analysis.

produce uniform results when applied with correct procedures, minimizes this problem.

There is still another vital factor to be taken into account. This is the welding material, because not all welding wire is the best welding wire to use for every job. The best production welders know that for a given job there are certain types of electrodes that are satisfactory and other types that are nowhere near satisfactory, and that a poorly selected electrode will have an adverse effect on the cost, as it will on the strength and serviceability of the welded structure. Also, that the cost of fabricating is not necessarily reduced by the substitution of a cheaper material for the one that has been specified. It should be the function of the shop executive or engineer to select the filler metal which is best suited for the construction and to specify it in terms which will avoid substitution.

The above discussion of a satisfactory car welding program emphasizes four strong contributing factors, namely, good car design, the planning of the shop equipment, the development of a personnel especially pointed toward production work, and the cooperation of the purchasing department in furnishing materials necessary for a successful operation. Presented thus briefly, the suggested program may sound quite formidable. However, it is only a logical approach to a new operation, an approach which minimizes the danger of waste motion and excessive costs.

Arc Welding in Railroad Car Construction

(CONTINUED FROM PAGE 37)

satisfactory car welding program starts in the drafting room. What constitutes good car design is best answered by the designers themselves. With a knowledge of weld values and weld costs, the problem is to arrive at a proper balance of safety and economy, with due regard to established specifications. The many successful ventures in the redesign of industrial machinery for welded construction are good evidence of what the drafting room can do when it goes at this problem with an open mind.

A more difficult problem will be encountered in the matter of shop equipment. The practice for so many years has been to let the repair-shop welder make a place for himself to work in that it seems like an almost complete reversal of form to lay out a shop with a view to making the conditions ideal for the production welder. The space requirement itself is considerable and there is added to that a definite requirement for installing metal-forming and cutting equipment, and for jigs and work manipulators. Furthermore, it is necessary to place all of the production equipment in a carefully planned position, so that the work will flow smoothly through the plant. Recent experience of a few car building shops has demonstrated that this kind of planning is entirely logical and workable.

Only a reasonably large-scale production can justify the installations that make for greatest economy. The

favored system is to assemble sides, ends, roofs and bottoms as complete units, each in a separate jig, then bring them together to be welded in the final assembly. The smaller members, such as bolsters, cross-bearers, and center sills are welded in jigs separately. All this demands a somewhat spacious layout, and the trend in car building will have to develop on this scale in order to realize most completely the broad economic advantages of the welded construction.

The Personnel Problem

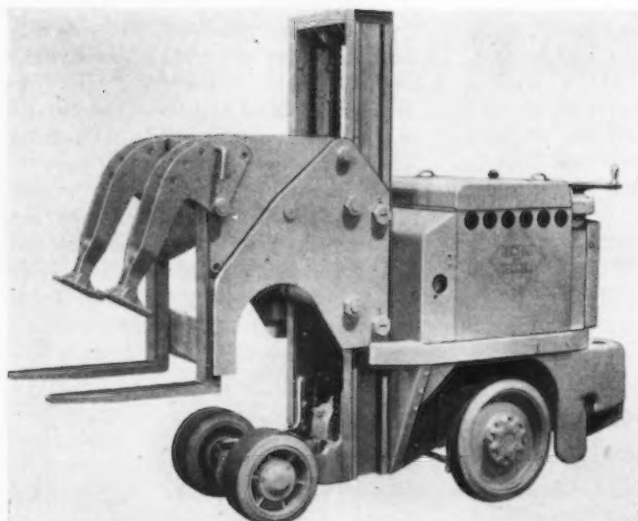
An equally important element in the picture is the welding personnel. This is a controversial subject, because it is usually discussed by supervisors whose opinions reflect different backgrounds of organization and experience. It has been observed that men who are accustomed to repair welding find it difficult to adjust themselves to the steady routine of production welding, although this is not universally true. Supervisors and inspectors have the problem of maintaining the high quality of workmanship that is required on this class of welding. Undoubtedly there is a scarcity of men thoroughly qualified for this supervisory work, but it is perfectly possible to train men for such work and also to train men for the actual welding operations. The fact that production work follows a standardized procedure and the fact that modern welding materials will

Wheeling Studies \$2,000,000 Program

MARTINS FERRY, Ohio. — Wheeling Steel Corp. is contemplating the building of a new sheet warehouse and complete galvanizing department at its Martins Ferry works. Plans and details are completed and preliminary bids on the buildings have been received.

The new buildings will utilize approximately 2400 tons of fabricated plates and shapes. If present plans go through, the galvanizing plant will be a new addition to the Martins Ferry works. Present equipment there includes six hot black sheet mills and two continuous cold sizing finishing mills. It is understood the main building will be 350 x 600 ft. and the cost of the project is estimated at nearly \$2,000,000.

Further Refinements Seen in Material



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AT LEFT

WHEN not required, the tin plate clamps on the new Elwell - Parker type F-10 truck may be locked in an upright position. Capacity, 5000 lb.

o o o

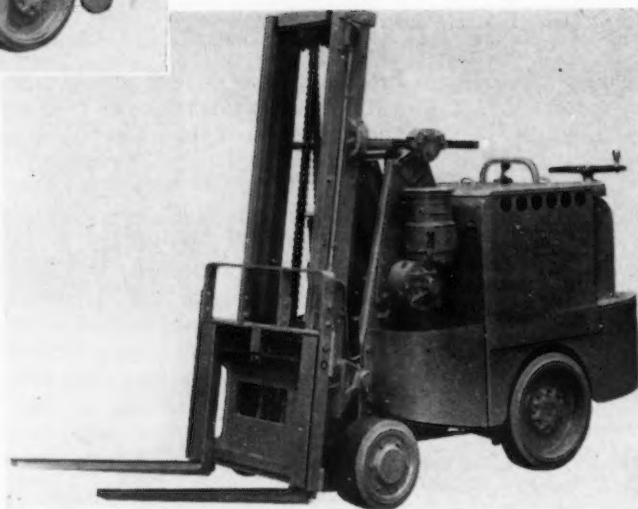
BBETTER design and better materials increase the range and cut the operating and maintenance costs of internal transportation machinery. Running the whole gamut of the various material handling apparatus, there are reviewed in this article recent announcements

ESPECIALLY designed for handling tin plate and for similar fork work, *Elwell-Parker's* type F-10 truck has a rated capacity of 5000 lb. and has two wheel drive and four wheel steer. Steering is by hand-wheel through gear reduction. The tin plate clamps are so designed that as the forks are raised, the clamps automatically lower and firmly hold the tin plate. A solenoid brake on the hoist motor locks the load in position unless released by power, and during lowering regenerative braking is applied in addition.

This truck has four speeds forward and four reverse. Drive axle is equipped with a 500 per cent overload, series-wound heavy duty and high-torque motor, controlled by a mill type magnetic contactor. Motor is connected to a free coasting worm and gear. The trail axle is a heavy, forged bar pivoted at the center to compensate for rough flooring. The series F-11 tiering and tilting fork truck, also illustrated, has similar electrical and mechanical features. A type E-1 high-lift platform truck has also been built around a similar chassis.

Gas Engine Type

ANEW heavy duty industrial tractor developing drawbar pull as high as 4400 lb. is being introduced by *Clark Tractor*, of Battle Creek,



o o o

AT LEFT

ELWELL - PARKER'S type F-11 tiering, tilting and telescoping fork truck is also rated at 5000-lb. capacity and has many features identical with the model F-10.

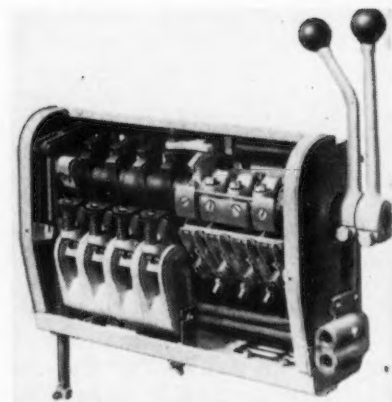
o o o

Mich. It is powered by a 6-cylinder, 46-hp. truck type gasoline engine, and has self-starter, generator, battery, horn, air cleaner, oil filter, removable front bumper plate, removable cast rear fenders, pneumatic tires and hydraulic brakes. Special equipment includes solid or zero pressure tires, removable front fenders, head and tail light, couplers, speedometer and removable rear bumper plate.

This *Clarktor-6* is built in three capacities of 3300, 4000 and 4400 lb. drawbar pull. Wheelbase 59 in., turning radius 112 in., speed of 11 m.p.h.

Gas-Electric Drive Unit

INTERCHANGEABLE in size with older models is the improved Standard model HC power unit for 2



THE Cam-O-Tractor controller, now standard on all electric trucks made by Yale & Towne Mfg. Co., Philadelphia, combines the high current interrupting capacities and long life of contactors with the positive action and safety of mechanical cam operation. Arcing with accompanying sticking or welding of electrical surfaces is said to be avoided.

Handling Equipment

By FRANK J. OLIVER

Associate Editor, *The Iron Age*

of makers of industrial trucks and their accessories; lift trucks and skids; wire rope slings; hoists of various kinds; a new twisted rubber tube conveyor; belt conveyors and magnetic pulleys; weigh feeders; roller conveyor sections and overhead mono-rail trolleys.

AT RIGHT

LARGER in size than the type FLM electric industrial truck battery announced several months ago is the new Exide-Ironclad type MEH battery of 1000 amp.-hr. capacity or 34.4 kw.-hr. It will provide power to operate trucks of 30,000-lb. capacity for 12 or more hours on one charge. The assembly has 18 cells, of 21 plates, assembled in steel trays. A 24-cell size has a capacity of 45.9 kw.-hr. at normal discharge rate. Weight 4200 lb. Size 54 $\frac{1}{4}$ in. long, 25 $\frac{3}{4}$ in. wide and 31 $\frac{1}{4}$ in. high.

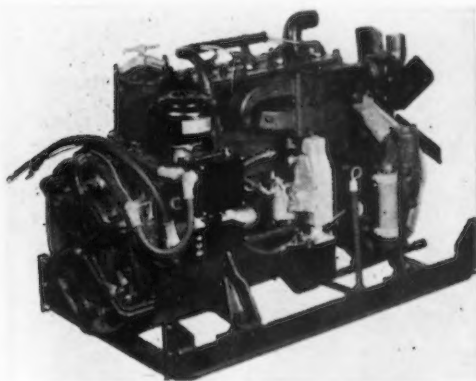


BELOW

THE new Clarktor-6 has 70-ton towing capacity on level.



to 5-ton electric trucks. Made by the Ready-Power Co., 3826 Grand River



A NEW Continental engine is used, together with a number of special accessories, in the improved model HC Ready-Power generator unit for propelling 2 to 5-ton industrial trucks.

Avenue, Detroit, it embodies a new design Continental motor with a lot of especially developed accessory equipment direct connected to a standard Ready-Power generator of 36, 48 or 60 volts. Among the engine features are individual cylinder porting, full length water jackets, alloy steel, inserted valve seats, and steel-backed, cadmium-nickel bearings. Included in the accessories are dual-belt driven fan and water pump, enclosed magneto drive assembly, low pressure oil filter, air cleaner and a Ready-Power series relay for automatic idling used in conjunction with a Syncontrol governor that automatically maintains a constant voltage under load. This new

governor is arranged to give a range of four operating speeds electrically.

Hand Lift Trucks

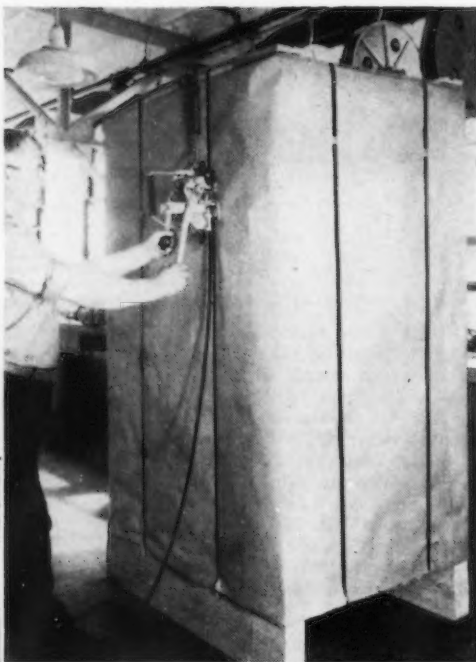
HYDRAULIC means are used for both lifting and lowering in a new type hand lift truck which has just been placed on the market by the Service Caster & Truck Co., Albion, Mich. Twin roller chains, attached to double hydraulic pistons, lift the platform and the load is locked automatically at any height. Lowering is effected by manipulating a foot control. Elevation of the load is by pressure on the handle, which need not exceed 100 lb. A variable lifting stroke allows loads to be inched up with short strokes or boosted quickly with long ones. Handle operates within a horizontal arc of 180 deg.

Platform is floored over to allow the truck to be used for other purposes than lifting skids. The front wheels are 10 in. in diameter, rubber covered. The truck is made in four standard capacities, 2500, 3500, 5000 and 6000 lb.

A SEMI-LIVE skid and a two-wheel lifting unit comprise the JackMaster system of material handling devised by the Lewis-Shepard Sales Corp., 245 Walnut Street, Watertown, Mass. The lifting unit is of arc welded construction and is equipped with large dual wheels and roller bearings. Lifting is accomplished with a fast, direct action, single

AT RIGHT

A NEW automatic seal-fed tool for applying $\frac{5}{8}$ and $\frac{3}{4}$ -in. Steel-strap to heavy shipments, including skid loads, has been developed by Acme Steel Co., Chicago. One lever tensions, while the other seals the joint and cuts the strip from the coil. Seals are furnished in clips of 50, and an equal number of Steelstraps can be applied before reloading the seal magazine.



BELOW

SEMI-LIVE skids from 2500 to 3500 lb. capacity and a two-wheel lifting unit are combined in Lewis-Shepard's JackMaster system of handling material.



stroke. The carrying platform has a smooth hardwood top entirely surrounded by an arc welded steel frame, with double side girders to hold the wood top in place. Platform wheels have roller bearings, pressure lubricated. Wheels of either the lifting unit or the platform may be metal or rubber tired.

Hoists

SHORT distance between the center of the hook in its highest position and the bottom of the monorail beam is featured in the new Hi-Lift hoist, made in 3 to 5-ton capacity by the Northern Engineering Works, 210 Chene Street, Detroit. The hoist is furnished with a rolled steel frame, right and left grooved drum taking the full length of the plow steel hoisting rope, Hyatt roller bearings, throughout, standard foot mounted motor with electric disk type brake and with a mechanical brake in the hoist gear train. All gears are machine cut and hardened.

The hoist is furnished with either hand traveled or motor operated trolley for a.c. or d.c. and with various



ABOVE

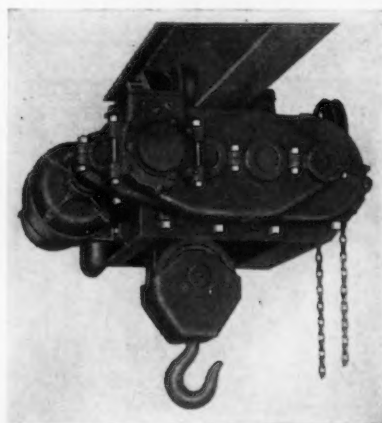
THIS heavy duty industrial box truck, made by the Stackbin Corp., 56 Troy Street, Providence, is built in two separate units. The chassis consists of a heavy channel steel frame, to which are bolted four casters. The body unit has 16-gage steel sides and a 14-gage inverted bottom which fits down over the chassis. The top sides are rolled to a bead, under which is welded a channel steel reinforcement.



kinds of control. It can be furnished floor or cab operated, with the drum either parallel to the runway or at right angles.

Jib Crane

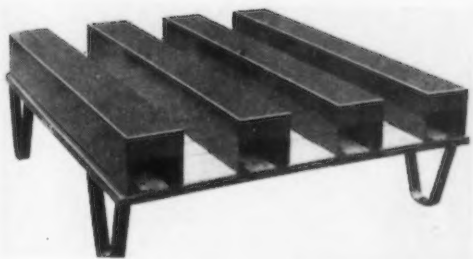
FOR work in side bays, low headroom areas and other confined spaces, a self-supporting pillar jib crane has been developed by the Harnischfeger Corp., Milwaukee, in capacities up to 5 tons, heights up to 20 ft. and to a maximum radius of 20 ft. The jib arm swings on high grade roller bearings, and the boom is said to swing with ease. This type of crane may be furnished with either the standard P&H pendant type rope of push button controls on the hoist, or at slightly higher cost may be equipped with the new P&H push button master variable-speed controller for all lifting, lowering and traveling operations.



STANDARD hoisting speed with a 3-ton load is 20-ft. per min. in the new Northern Hi-Lift hoist, a low headroom type, with complete accessibility to all parts.

AT LEFT

A 5000-lb. load can be lifted in five strokes of the handle of this new hydraulic lift truck, made by Service Caster & Machine Co.



AT LEFT

STEEL runners are bolted to the deck of this Yale skid platform for handling material in bags by means of an electric fork type truck. The forks get under the bags between the deck runners, or a hand lift truck can be rolled under the wood deck and the whole unit transported.

AT RIGHT

LIGHT weight and flexibility are features of the new Drew wire rope slings, made by the Macwhyte Co., Kenosha, Wis. The loop eyes at both ends are formed by the endless elements of 1-in. wire rope, which are braided to form a flat, six-part body. Each sling has strength of 176.4 tons, and when two of them are used in a basket hitch, the joint capacity is 98 tons.



countered in conveyor work. While the crepe surface provides the necessary degree of roughness, its design is such that it is readily cleaned, and the tan compound is said to be tough and resilient, as well as attractive in appearance. Minimum top cover thickness is 1/16 in., but this thickness may be increased. This crepe belt is furnished on 28 and 32-oz. duck with the special finish cover on the carrying side only. Additional back cover thicknesses will be furnished on order.

Magnetic Pulleys

TO allow for greater radiation area, a new ribbed design is used in the one-piece casting found in the improved line of high-duty magnetic pulleys, made by the Stearns Magnetic Mfg. Co. (formerly Magnetic Mfg. Co.), Milwaukee. Improvements have also been made in the radial air ducts by which cooling air is provided the windings through the compressive action of the belt on one side and the

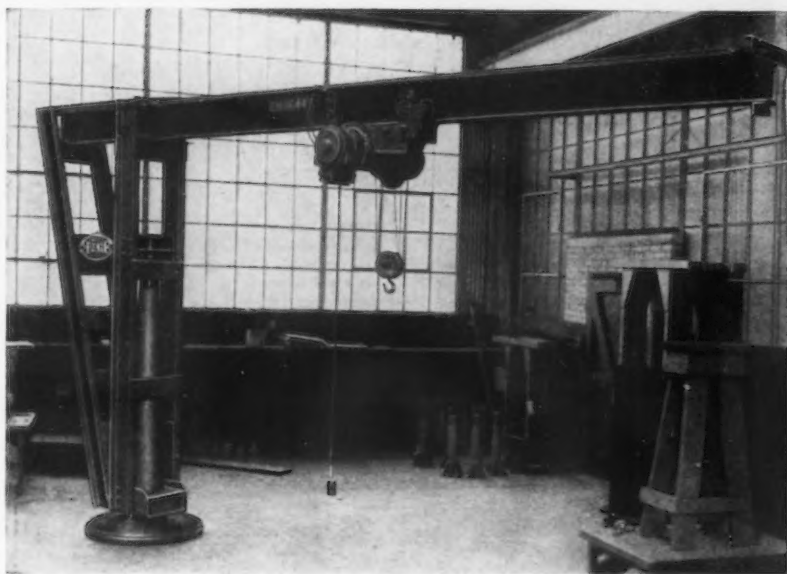
Conveyors

A HOLLOW rubber tube split longitudinally, one half fitting by tongue and groove joint into the other half, and kept tightly-closed by a longitudinal twisting of the tube as it passes over grooved pulleys is the basis of a new continuous conveyor system developed by the Johns Conveyor Corp., 251 Ogden Street, Newark, N. J. The tube is endless, and being quite flexible, may be carried horizontally, vertically or at any angle, and around a 90-deg. bend with ease. The amount of power required to drive a complete system compares favorably with the average flat belt conveyor system of equal capacity. The tube system will handle granular, crystalline or flake material in sizes from finest powders up to 1 in. aggregate, or liquids, and at temperatures up to 150 deg. F.

To load, rollers squeeze the tube so as to open the joint on one side as it passes through a bin of material or as material is poured in. To discharge, similar rolls squeeze the tube open on the under side. As soon as the pressure is relieved, the tube closes tightly due to the twist.

Crepe Finish Conveyor Belt

CREPE finish package conveyor belt is a new type developed by United States Rubber Products, Inc., 1790 Broadway, New York, for conveying packaged material on a greater degree of incline than is normally en-



THE F&H self-supporting pillar jib crane brings overhead traveling crane service to confined areas.

AT RIGHT

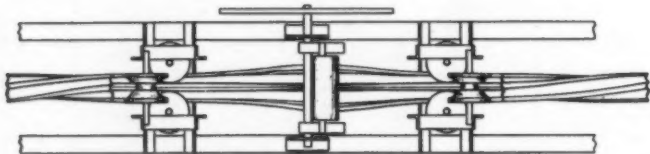
TWENTY-SEVEN

Tons of sheet bundles were unloaded by one man in 39 min. at the plant of the Ohio Electric Mfg. Co., 5908 Maurice Avenue, Cleveland, using a 21 x 83-in. Ohio rectangular magnet. These bundles weigh 5000 lb., although the magnet will handle 10,000-lb. bundles. The bundles shown measure 34 x 100 in. and are delivered from the mill strapped to three 2 x 4-in. planks equispaced on the bottom. With former methods, it required the labor of three men for 1½ to 2 hr. to unload 20 tons, and then a number of sheets were damaged from chain marks.





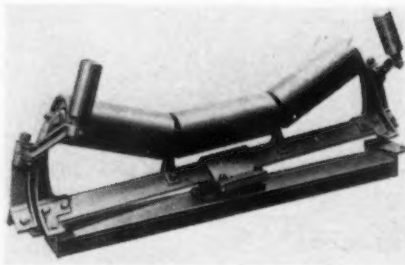
HORIZONTAL and vertical turns being made by the Johns twisted rubber tube conveyor, shown handling coke breeze in a steel mill.



DISCHARGE from the Johns twisted tube conveyor is effected by application of a pressure roll which opens the tongue and groove joint at the bottom.

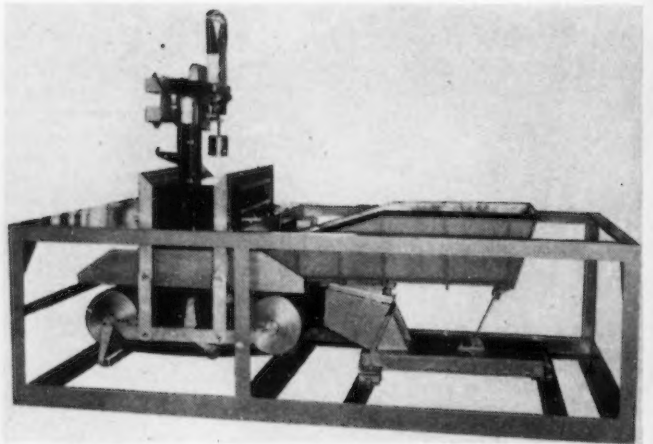
AT RIGHT

IN the new self-aligning idler for automatically training conveyor belts without damaging them, made by the Jeffrey Mfg. Co., Columbus, Ohio, one of the two vertical guide rolls moves outwardly the instant the belt touches it. In so doing, the idler assembly is swiveled about the supporting cross member sufficiently to cause the belt to return to its normal position. If belt direction is reversed, the guide rolls are swung about 180 deg. and locked by pin.



suction effect on the other. The coil windings are completely surrounded by steel for full protection, and the steel cover plates that enclose the outer diameter, while light in weight are of ample strength to carry the belt. They short circuit a small amount of the magnetic lines of force, providing a comparatively uniform field over the width of the belt.

Non-magnetic end rings of alloy steel, machine fitted to the end poles,



ABOVE

A STEADY flow of dry bulk materials by constant weight can be had with the Syntron weigh feeders, made in capacities from 25 lb. to 25 tons per hr.

provide support for the unloaded edges of the belt and confine the magnetic forces to the active portion of the belt. The one-piece magnet body casting is held to the drive shafts through steel hubs welded to the support arms and keyed in position abutting the shoulder of the oversize portion of the shaft.

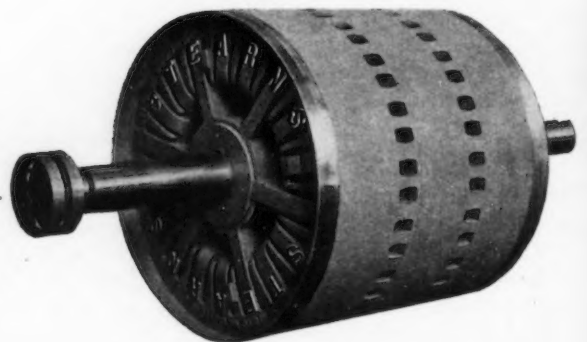
Weigh Feeders

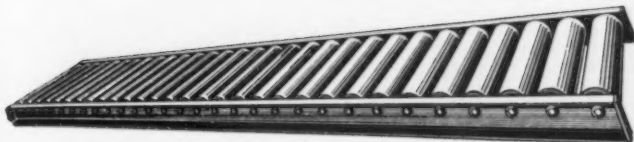
AUTOMATIC weigh feeders for either continuous or batch work are now available. A continuous type made by Syntron Co., 694 Lexington Avenue, Homer City, Pa., consists of a vibratory feeder conveyor discharging onto a constant speed belt conveyor suspended from a scale having sensitive electric valves. With the slightest under or over-weight movement of the scale beam, the electric valves speed up or slow down the discharge from the feeder. The latter is of the pulsating, electromagnet type conveying dry bulk material by vibration, so it flows like water.

PHOTOCELLS and interlocking sequence controls, as well as manual manipulation of the scale beams, are employed in the automatic batching scales announced by the Buffalo Scale Co., Buffalo, N. Y. The material in the garner is conveyed to the weigh hopper by various means,

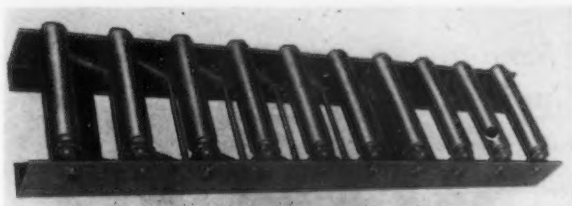
AT RIGHT

A NUMBER of improvements designed to increase operating efficiency have been made in the Stearns magnetic pulleys, which are furnished in a wide range of diameters and face widths to accommodate any belt conveyor system.





PALMER-BEE roller conveyor sections can be had fitted with commercial ball bearings, precision roller bearings or precision ball bearings.



IN the "Standard" impact absorbing roller conveyor, each roller assembly is mounted on a set of steel arms pivoting on a shaft supported in the angle iron frame and restrained by a pair of coil springs. When an unusual load is encountered, the springs allow the rollers to deflect momentarily.

such as vibrating conveyor. The weigh beams are operated manually, and the photocells control the motor, magnetic vibrator, valve or gate, as conditions dictate. As the quantity of material going into the hopper approaches its set capacity, the first electric eye operates the mechanism on the conveyor so as to slow down the flow to a dribble. Then the second cell stops this flow entirely. Equipment is available to handle any reasonable number of ingredients. Accuracy of better than 0.1 per cent is claimed on individual ingredients and the total batch.

Roller Conveyors

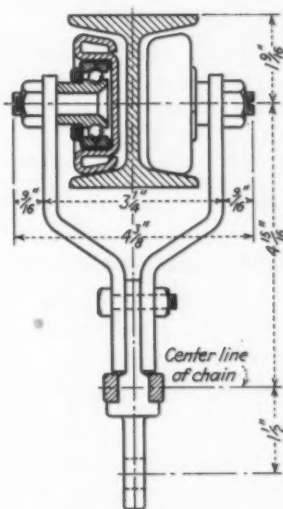
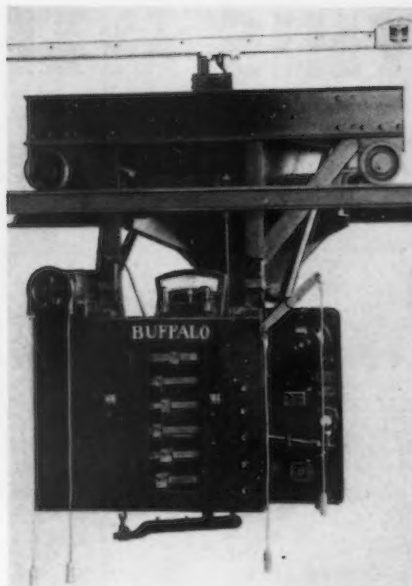
THREE types of bearings are available in the new line of roller conveyors recently introduced by *Palmer-Bee Co.*, Detroit. For normal service, commercial ball bearings, with capacities from 60 to 4500 lb. per roller, are employed in rollers ranging from 1 to $4\frac{1}{2}$ in. in diameter. These bearings fit hexagon axles. For medium and heavy duty, precision tapered roller bearings are used, with capacities from 1000 to 12,000 lb. per roller, in sizes from $2\frac{1}{8}$ to $7\frac{5}{8}$ in. diameter. Lastly there is a precision ball bearing type with capacities from 1000 to 8000 lb. Bearings are mounted in tubes either directly, into a counterbored tube, or by means of a variety of cup adapters. Standard sections are 10 ft. in length.

THE *Standard Conveyor Co.*, North St. Paul, Minn., has developed an impact absorbing roller con-

veyor to remove the loading shocks from roller bearings and shaft such as occur in rigidly mounted rollers.

AT RIGHT

AN example of the adaptability of Buffalo automatic batching scales is shown by this installation on a traveling larry car.



SUITABLE for use with endless-chain, power-operated type trolley conveyors, or as individual, manually operated trolleys is this light duty overhead trolley made by *Mathews Conveyor Co.*, Elwood City, Pa. The outer shell of each wheel is case hardened steel, $\frac{3}{8}$ in. thick. The ball bearing has a split outer race enclosed within a steel jacket and the balls have three-point contact. The seal is combined steel and felt labyrinth. The trolley is shown mounted on a 3-in. I-beam. Capacity is 150 lb.

Furthermore, when irregularly shaped commodities are carried, in this conveyor if one assembly is called upon to carry more than its share, the irregularities of the commodities cause the overburdened roller to depress sufficiently to distribute the load over adjacent rollers. Long life of the rollers is thereby claimed.

Sharon Plans Byproduct From Pickle Liquor

SHARON, Pa.—In a statement recently filed with the Securities and Exchange Commission, Sharon Steel Corp. disclosed that it will put into operation on Sept. 1 a plant for manufacture of insulation blocks from spent pickle liquor, an end product in the manufacture of steel. The company will now recover the spent liquor from pickling baths in order to eliminate the need of treatment which would be necessary if the liquor were released into the streams or rivers. Sharon Steel is the first licensee of the Allied Development Corp., Cleveland, which developed the process.

R. D. Wood Co., Philadelphia, has appointed Charles C. Grant, 436 Second National Building, Akron, Ohio, as agent in the Cleveland-Akron-northern Ohio area for the company's hydraulic machinery division which includes hydraulic presses, high pressure hydraulic valves, and special hydraulic machinery for the rubber, plastic and metal forming industries.

John A. Roebling's Sons Co., Trenton, N. J., has established a branch office and warehouse at 855 North Avenue, West Pittsburgh, Pa., to carry a complete line of wire rope and insulated wire.

THIS WEEK ON THE

By W. F. SHERMAN
Detroit Editor

ASSEMBLY LINE

... Better business indicated by decreased hand-to-mouth buying ... Firming of market for cars indicates shortage by end of September ... Production passes low point for 1938 ... Ford and Willys resume production.

DETROIT.—A change in buying trends by automobile companies manifested itself in early spring. It has become much more pronounced in Detroit in the last six weeks, the improvement gaining strength in July, the first month during the year when it could be said that general business was on the increase rather than on the decrease.

Buying of substantial quantities of material for new model cars is taking place during the current month and should reflect strongly in the next report on purchasing agents' activities.

A real indicator of better business in the future is found in statistics compiled by the Purchasing Agents Association of Detroit. They show that buying policies have been altered. Hand-to-mouth buying has dropped 14 points in two months, now being at 34 per cent.

"This does not indicate that we have in any way reached normal, because during periods of real business activity, this figure is usually from

1 to 5 per cent," according to the official comment of the association. "The fact, however, that hand-to-mouth buying policy is gradually moving out of the picture reflects very materially the attitude of management toward future business."

The general survey made among purchasing agents shows an increase in credit, improvement in collections, increase in inventories and a decided increase in commodity prices. Employment is reported on the increase also.

Auto Output Has Hit Low

Automobile output during the last week showed little change, although there was a loss from 14,771 to 13,790, according to Ward's Automotive Reports. A year ago at this time, production came to 103,250 cars and trucks. Ward confirms the fact that automobile production has passed the low point for 1938. From now on there will be a steady rise until November or December.

New passenger car registration reports in 21 states for July show an increase of 5.2 per cent over June, according to R. L. Polk & Co. This supports the prediction made on the basis of early returns from principal cities that the month-to-month downward trend in automobile sales was halted in July.

Truck sales in the same 21 states jumped 35.37 per cent in July over June.

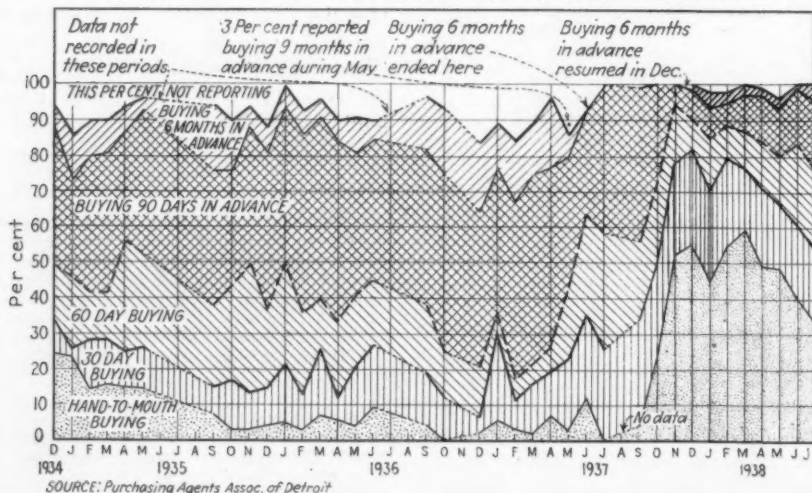
The automobile industry is beginning to hold the opinion that salvation lies in intelligent control of the used car market. Today even production-minded executives are repeating that thought again and again, even while they prepare for new models and bigger production. It is accepted now, as never before, that the used car problem is a big one, too big to be left up to sales-minded executives alone.

However, the present health of the automobile industry is confirmed by reports of decreases in the used car backlog which throttled the automobile industry in late winter and spring. H. J. Klingler, general manager of Pontiac, says that on Aug. 1 his dealers, nationally, had fewer unsold used cars in stock than at any time since Nov. 1, 1936. Firming of the market in the last few weeks indicates that by Oct. 30, the approximate time when the new Pontiacs will be out, the number of used cars per Pontiac dealer may hit the lowest point in years.

On Jan. 1 stocks were up to the alarming total of 40,240 units, according to Pontiac records. Systematic reduction, with scores published every 10 days, have revealed a reduction to 22,825 used cars Aug. 1. On the same date last year approximately 37,069 used cars were in stock.

The campaign which Pontiac launched had as its objective 20,000 used cars in stock on Oct. 30. But improvement ahead of schedule has resulted in lowering the objective to 18,000 cars, and Mr. Klingler says

BUYING TRENDS IN METAL-WORKING FIRMS AND AUTO INDUSTRY (DETROIT)



HUMAN FINGERS

MECHANICAL HANDS



It takes a happy
combination of both
to fabricate
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Springs**

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by machines equally facile
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amazing twists and turns in
spring manufacture. Just
what this means to you as a
user of springs may best be
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*All three considered, you'll find that
Barnes-made Springs are the economical buy.*

Springs

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SPRINGMAKERS . FOR MORE THAN THREE QUARTERS OF A CENTURY



E. H. KELLEY, 10 years with the Chevrolet engineering organization, has been named Central Office production engineer by Chevrolet. (At right) EARLE STEELE MAC PHERSON who has borne a double load as production engineer and design engineer now will concentrate on supervision of the design alone. Mr. Kelley's duties as production engineer marked a further step in the coordination of Chevrolet's large organization with its wide-spread plants. He acts as the liaison man between designing and testing groups and resident engineers in various Chevrolet plants. Mr. Kelley is a member of the Governing Board of the Detroit Section of the Society of Automotive Engineers.



that a further lowering of the quota will likely be made.

Car Shortage May Develop

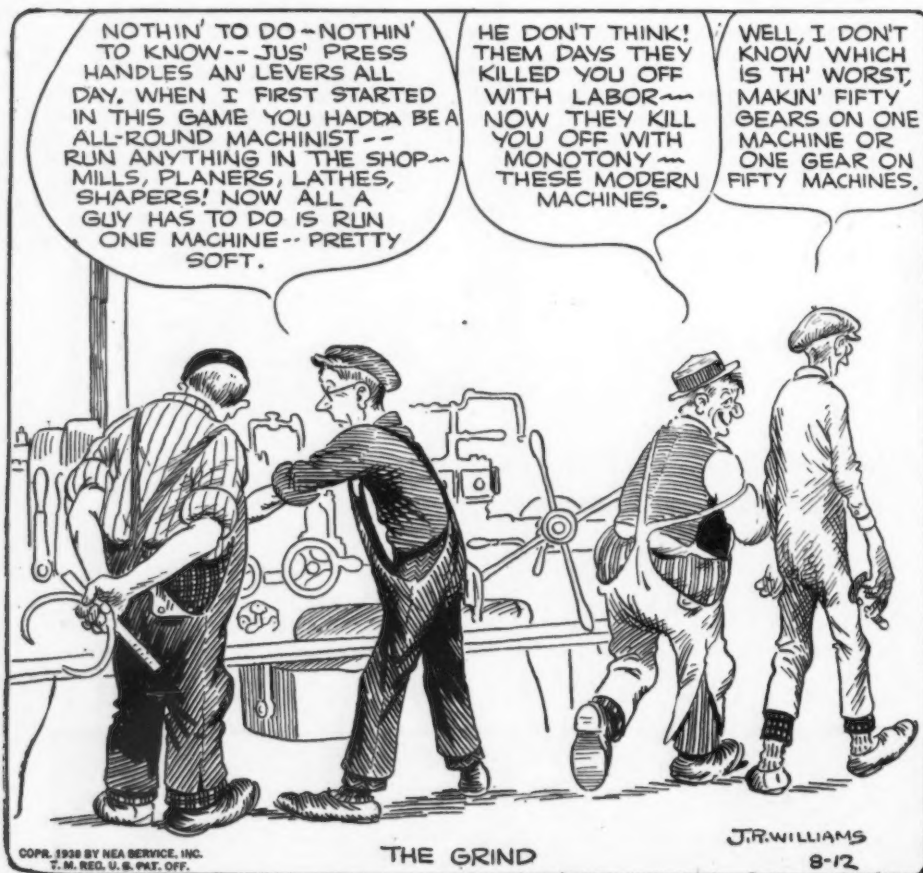
Evidence that a shortage of both new and used cars will develop before

the 1939 crop of models is available is strongly indicated in an analysis of reports submitted by representative automobile dealers to the National Automobile Dealers Association. The survey shows that dealers have on

hand an average of 25 new cars for each dealer. This is given as about a 37-day supply, as of Aug. 1. These same dealers report an average of 45 used cars for each dealer, or approximately a 44-day supply. On this basis it appears that stocks of new and used cars both will be exhausted by the end of September.

THE BULL OF THE WOODS

BY J. R. WILLIAMS



Ford and Willys Resume

Among things which count for present increases in various industrial indices are the resumption of operations by Willys-Overland, Inc., in Toledo with the recall of a thousand men last Wednesday. Willys reports a pickup in sales demand which followed price reductions made July 21. The plant is again producing parts for the current models and the assembly line will start up next Monday on 1938 models. Production is scheduled through to the fall inventory and model change, which will be prior to the mid-November shows.

Ford resumed production this Monday, also on 1938 models, and is expected to follow a similar schedule until the shutdown which is scheduled for Sept. 15.

Koppers Gets Hydrant Order from Chicago

FORT WAYNE, Ind. — Koppers Co., western gas division, has received a contract from the city of Chicago for 2000 fire hydrants to cost approximately \$90,000. They will be built according to the city's own standard specifications.

Pontiac's New Apprentice School

(CONTINUED FROM PAGE 35)

one on the planer, eight on bench work, three on drill press, three on heat treating, two on inspection and one on miscellaneous jobs.

A student is not required to take any outside school work during the time he is in the apprentice school, but he is expected to become proficient in mathematics, drawing and other technical subjects he may need to become a first class mechanic. How he will gain that proficiency is between him and his instructors. It will depend, too, on the amount of formal schooling he has had before entering the apprentice school. A lad who has finished high school will have much less ground to make up than one who had only one year in high school or one who only finished the eighth grade. In the beginning the management will have satisfied itself as far as possible on the aptitude and ambition of the student. If he prefers to and can go to night school for the study of the things he needs to make him a competent mechanic he may do so, or he may pursue the necessary studies at home. The management is only interested in his having the requisite amount of technical education to take fullest advantage of the shop training he is being given. The announced purpose is to furnish the Pontiac factory with men who are thoroughly versed in the methods used in its plants and to give boys an opportunity for technical education which might otherwise be denied.

Fred A. Voelker, who is in charge of the apprentice school as chief instructor, illustrates in his own experience the qualifications which are necessary for this new kind of educational work. He served an apprenticeship as a machinist in a Michigan factory which built marine and mining machinery. Later he went to a state normal school for two years and came away with a lifetime teaching certificate. Then he was instructor in farm mechanics at a high school and later taught machine shop practice and forging in another high school. For some years he had been connected with the vocational training work of the city public schools in Pontiac and had worked during vacation periods

as a tool and die maker in the Pontiac company shops. So he knows both the practical and the teaching parts of the job he has undertaken.

It is planned to have one instructor for every 10 or 12 apprentices, and these men will be experienced mechanics who also have the gift of imparting the knowledge they have gained in their trade. It is planned to select instructors from the older men in the shop wherever possible.

The most interesting feature of the Pontiac school, as in other schools which have in view the same end—the making of mechanics—is the plan for operating it so that the cost may be covered. No matter how desirable it may be to produce well trained mechanics no factory could afford to establish training schools if the initial cost of building and equipment and the operating cost had to be carried as an overhead expense. A school must be made a useful part of the plant and paradoxically, it is probably a better school for that very reason.

In effect the new apprentice training school at Pontiac is a jobbing machine shop within the Pontiac motor plant and its customers are the regular departments of the plant. Repair parts for machinery, gages and inspection tools, parts or complete assemblies of jigs and fixtures or other general machine shop work can be done there. Every department which has a job which can be sent out advantageously, sends it to the school. With each job comes an order showing just what is to be done and a careful estimate of the number of hours which would be allowed for labor if it were to be done by the skilled men of the department sending the job in.

That time estimate amounts to a cost limit for Mr. Voelker. Roughly speaking the pay rate in the whole school, including instructors, is probably not much more than half the rate of any department which sends him work. The boys are all in the early periods of their instruction and their rate is still low. If the rate is half of the rate in a department sending in a job that means that the school can take twice as long as the estimate and

still keep within the limit. As a matter of experience, as far as the school work has gone, no job has been done where the time taken in the school was anywhere near twice the estimate placed on it. That means, of course, that the general ownership of both plant and school has profited by having work done in the school instead of in plant departments or outside machine shops.

Whether that would be true after the school has been running long enough so that its average wage rate is higher is something which only experience can show. It is fair to believe, though, that as the rate of the students advances their proficiency will become greater, so that their time of performance on any particular job will more nearly approximate the time estimated for skilled men. And anyhow, there is the overhead expense created by the construction and equipment of the school which ought to come into the picture somewhere. If it is going to be met it can only be out of the difference in actual payroll costs between doing certain classes of work in the school or in the regular departments.

It may safely be assumed, however, that within reason the Pontiac management is not so much interested in the actual profit or loss on the work which may be done in the school as it is in accomplishing the main purpose of the effort, which is giving boys who might not otherwise be able to get it a thorough mechanical education, that they will be useful citizens in the world and good workmen or supervisors on Pontiac cars.

Italian Government Sets Up A Scrap Monopoly

LONDON (By Mail).—The Italian Government has just announced its decision to set up a special distributing board which will monopolize the trade in scrap iron and steel. It will also control the distribution of these commodities to the iron and steel industry.

The measure is part of the far-reaching reorganization of the Italian steel industry which is now in progress.

THIS WEEK IN WASHINGTON

... Girdler finds New Deal plunging country into industrial turmoil, urges CIO be investigated for public's benefit . . . More small steel manufacturers protest as Public Contracts Board weighs SWOC's demand for freezing of wage rates.

By L. W. MOFFETT

Resident Washington Editor
The Iron Age

WASHINGTON. — Tom M. Girdler, board chairman of Republic Steel Corp., proposed to the Senate Civil Liberties Committee last Thursday that it investigate records of 550 cases of violence and intimidation by the CIO which he called to the committee's attention. A proper investigation along these lines, he said, would establish the committee in the public mind as being truly concerned with the civil liberties of all American citizens.

"Your committee has subpoenaed our records to obtain the facts with respect to expenditures made by Republic in connection with industrial disputes," Mr. Girdler said in a prepared statement which he was not permitted to put into the record until after more than six hours of question-and-answer testimony from a score of Republic Steel officials and employees. "We request that the same degree of close examination be publicly applied to similar records of the CIO in order that the public may know what use was made of \$1,500,000 which, according to testimony before this committee, was made available to the Steel Workers' Organizing Committee in its organizational campaigns in the steel industry."

Mistakes Under Stress

In requesting the investigation, Mr. Girdler emphasized that he neither condones nor attempts to justify "any reprehensible act that may be truthfully laid to anyone connected with Republic." It is not surprising, his statement said, that in periods of severe stress and strain, when manage-

ment has to contend with "ruthless violence and lawless forces apparently planned by union organizers," judgments were sometimes warped, some mistakes were made by Republic employees, and civil authorities could offer no protection.

After conceding these mistakes, the Republic board chairman assailed the committee's proceedings, complaining that the hearings have painted a one-sided picture of the controversy between Republic Steel and the CIO, have given a distorted impression of Republic's relations with its thousands of employees, and have prompted "an undercurrent of rumor for months that because our company has signed no contract with the CIO the present session was to 'smear' Republic Steel Corp., crucify Tom Girdler and whitewash the CIO."

Espionage Always Unjustified

The only portion of his prepared statement which he was permitted to read into the record early in the hearing covered his answer to alleged industrial espionage cited by Chairman La Follette. "Your committee has laid great stress upon the alleged activities of our police department along the line of labor espionage," Mr. Girdler read from his statement. "Let me state flatly and emphatically that any activities of our company guards beyond the safeguarding of our properties against vandalism and sabotage and the protection of our employees from violence, were without my knowledge. There is no justification for espionage which is aimed against unionization of employees or which would in any way interfere with their collective bargaining rights. Explicit orders against the practice in Republic are now in effect."

Mr. Girdler briefly reviewed the strike at Republic plants in 1937, recalling that it was called by the CIO because they wanted a signed contract, that there was no question of wages,

hours, or working conditions or collective bargaining involved and that the Labor Board subsequently held that refusal to sign a written agreement did not constitute an unfair labor practice. He cited three reasons for Republic's refusal to sign a contract: (1) an overwhelming majority of Republic employees did not want it; (2) such a contract was the first step toward a closed shop and the check-off; and (3) CIO was not under responsible leadership, with communistic influences dominating its activities.

Industrial Peace Needed

"What this country needs today, if industry and its workers are to prosper," Mr. Girdler continued, "is a form of collective bargaining and a national policy for industrial relations which will bring industrial peace." Instead of producing industrial peace as it was designed to do, he characterized the "whole New Deal program" as plunging the country into "a period of unprecedented industrial turmoil and conflict" and said the Civil Liberties Committee is on the wrong track in seeking individual cases of violence, or of labor espionage dug up out of the past. The present objective should be, he told the committee, to find a collective bargaining plan that will eliminate industrial conflicts in the future. He recommended revising the Wagner Act along these lines as "the first requirements for industrial peace":

1. Taking from the NLRB the combined power of investigator, prosecutor, judge and jury;
2. Giving the employer the right to complain to the tribunal;
3. Revising it so that the law conforms to the bill of rights and preserves the guarantee of free speech;
4. Protecting workers from coercion from any source;
5. Imposing upon unions responsibility for their actions, placing an obligation on them not to conduct picketing destructive to any man's right to work.

Throng Attends Hearing

Mr. Girdler's appearance before the committee was accompanied by all the traditional Washington fanfare. Motion picture cameras clicked, flash bulbs exploded, Washington corre-

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spondents turned out en masse, a crowd filled the small hearing room, overflowed into the corridor. Both Mr. Girdler and Senator La Follette were alternately stern, then jocular. They frequently exchanged sharp quips.

Mr. Girdler was accompanied by Charles M. White and Donald B. Gillies, Republic vice-presidents. Sitting with Chairman La Follette, although not members of the committee, were New Hampshire's Senator Bridges

and West Virginia's Senator Holt, the latter a bitter CIO critic. It was Bridges who led an unsuccessful attempt in July, 1937, to launch a Senate investigation of the non-delivery of mails in the Ohio strike section, allegedly because of CIO pickets. Neither participated in the committee's proceedings on Thursday.

Chairman La Follette questioned Mr. Girdler in detail as to his early experiences in the steel industry, his connection with Jones & Laughlin's

Aliquippa works, his subsequent elevation as board chairman of Republic Steel, the functions of his office, his attitude on labor relations, and the operations of the company's police department. Questions which Mr. Girdler did not answer direct, he frequently replied he didn't know or he referred the chairman to some other member of his staff. As many as six or seven witnesses were on the stand at once but Mr. Girdler stayed on from the time the hearing opened at 11.00 a.m. to the time it was recessed at 7.35 p.m.

Republic's Labor Policy

Figuring prominently in the evidence submitted at the hearing was Republic Steel's labor policy statement of May 11, 1937, issued after the Supreme Court invalidated the Wagner Act, in which the company expressed its willingness to bargain with anyone, asserted the right of every employee to choose his own collective bargaining representatives free from coercion, interference and discrimination, and denied any necessity for signing a CIO contract.

Introducing evidence that Republic representatives had obtained documents from a closed union meeting, had them duplicated and sent out to company officials, La Follette asked Mr. Girdler if he approved of the practice.

"No, I don't approve of it," Mr. Girdler replied, denying he saw any evidence of intimidation or coercion in violation of Republic's labor policy. "It's just a waste of time. I think it's silly to have a representative attend a union meeting to obtain information."

Happiest Employees in Country

The subject of employee representation plans also came in for its share of attention. La Follette produced for the record an article written by the Republic head printed in the *Rotarian* in July, 1934. In it Mr. Girdler denied the steel industry was opposed to collective bargaining as charged by the CIO and expressed belief that the employee representation plan offered the best form of collective bargaining in the steel industry. Mr. Girdler told Chairman La Follette that was still his recommendation. He explained that as early as April 8, 1930, the company had started to carry out the principles of the plan but that following the enactment of Section 7-a, and "a lot of other laws which got me alphabetically confused, we adopted the plan fully and it was so highly

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successful that I have yet to see a happier, more successful group of employees in the country."

Also read into the record was Mr. Girdler's testimony presented last summer before the Senate Post Office Committee in which he asserted that since enactment of the Wagner Act his company had withdrawn its financial support from the employee representation plan completely. Supplementing this statement, La Follette placed in the record a report alleging that from January, 1933, to April, 1937, Republic had listed expenditures of \$392,120 for its employee representation plan.

Little Money Spent

Mr. Girdler conceded he had made "a mistake" in saying the support had been withdrawn "completely" but stuck to his previous statement, also made a year ago, that the firm's contribution to its employee representation plan was "infinitesimal" when compared to the company's annual payroll. He reminded the chairman that a substantial proportion of that sum had gone for industrial relations, a legitimate expense at any time and one which would have been made regardless of whether the company had an employee plan, a CIO contract or one with the AFL.

Other subjects on which Mr. Girdler was questioned included the National Association of Manufacturers' educational program, a subject gone into several months ago by the committee; any connection between the American Iron and Steel Institute and the NAM's program; any Republic contributions to the association; Republic's designation of the public relations firm of Hill & Knowlton to conduct a special research survey of labor relations, CIO activities and associated subjects. Reminded that his company, according to the records, had paid Hill & Knowlton \$14,332 from August, 1937, to July, 1938, Mr. Girdler said he thought no sum too large to solve the labor relations problem and to offset "this barrage of misrepresentation."

Golden's Telegram Offered

Producing a copy of a telegram sent to Republic Steel in May, 1937, by Clinton Golden, SWOC director in Pittsburgh, in which a CIO contract with Republic was requested, and the Republic answer that it saw no necessity for a signed contract but would be glad to hold a conference with union representatives, Chairman La Follette launched into a resume of the

so-called "Little Steel" strike of last year, including the unsuccessful efforts of the Steel Mediation Board to bring about a settlement.

Mr. Girdler testified that a great deal of pressure had been brought "by our men" to sign a contract similar to that signed by Carnegie-Illinois Steel Corp., recalled that he was summoned to Columbus by Ohio's Governor Davey in an attempt to avoid a strike, and related how he had assured President Roosevelt over long-distance

telephone of his desire to cooperate in reaching an agreement to stop a strike.

Referring to the Steel Mediation Board's work, Mr. Girdler said the only suggestion he heard from the members was that "if we'd sign a contract then everything would be all right." Neither Mr. White nor Mr. Girdler could recall that the board had suggested an election to determine the collective bargaining group and that if the CIO didn't poll a majority vote, the company would not have to nego-

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tiate a contract. J. A. Voss, Republic's industrial relations manager, testified that such a suggestion, he believed, had been made.

No Estimate on Strike Loss

Shortly before recessing the hearing subject to further call by the chair, La Follette estimated the cost of last summer's strike to Republic at \$1,900,000, which he estimated at 21 per cent of the company's net operating profits for the year. Mr. Girdler reminded him that no accurate estimate could be made of the cost.

Also read into the record before the recess was a statement made in April, 1938, by Myron C. Taylor, to United States Steel stockholders that the union with which it had negotiated

agreements had scrupulously adhered to its contracts, and that the company had been free of labor disputes since the agreement.

"Have you any comments on that?" asked Chairman La Follette.

"None whatsoever," was Mr. Girdler's answer.

Bethlehem Is Awarded \$10,336,000 Ship Contract

WASHINGTON.—The Maritime Commission has awarded a \$10,336,000 contract to the Bethlehem Shipbuilding Corp., Ltd., of Quincy, Mass., for construction of four steel cargo vessels to cost \$2,559,000 each.

Officials estimated the amount of steel to be required at 16,560 tons.

The vessels are the first of 10 to be constructed for the American Export Lines, Inc., during the next 10 years and are the first to be built for a privately owned American flag shipping company in accordance with the terms of the permanent Government subsidy agreements under the Merchant Marine Act of 1936. Deadweight tonnage is estimated at 8900 tons each.

High Rail Rates Cripple South, President Is Told

WASHINGTON. — Describing the South as the country's "greatest untapped market" and the one in which American business can expand "most easily," Lowell Mellett, head of the National Emergency Council and former Scripps-Howard newspaper editor, has reported to the President that the major problem faced by almost all industry in the South is that of freight rate differentials. Manufacturers in the Southeast face an estimated 39 per cent relative disadvantage and Southwestern manufacturers a 75 per cent disadvantage in competing with other producers within the Eastern territory, Mr. Mellett said.

Tariff Commission Offers 527-Page Survey of Steel

THE United States Tariff Commission has issued a 527-page survey on iron and steel covering the industries and international trade of the principal producing and trading countries, with particular reference to factors essential to consideration of the tariff. This survey, in preparation for two years, embodies comprehensive and up-to-date information respecting the iron and steel industries of the world. A limited number of copies of the report (No. 128, second series) are available for distribution by the Tariff Commission, or the report may be obtained from the Superintendent of Documents, Washington, at 60c. a copy.

Republic Issues Map Clarifying New Prices

REPUBLIC STEEL CORP. is offering buyers of iron and steel products a map giving new price basing points and listing products for which the various cities are base points. The map is titled "Dispelling The Fog."



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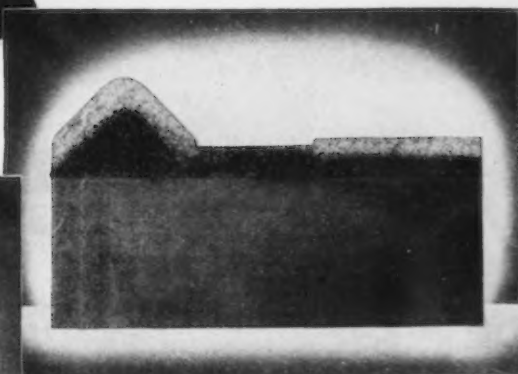
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Above: This illustration shows a typical cross section of a FLAME HARDENED bed way.

Left: Typical sections of bed way castings used by Monarch research to determine from a metallurgical standpoint, the best alloy castings for FLAME HARDENING. Hundreds of these test pieces have been FLAME HARDENED in perfecting Monarch's FLAME HARDENING technique.

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More Small Companies Protest Freezing of Pay Rates by U. S.

WASHINGTON. — Protests from small steel companies to the SWOC proposal to fix the minimum common labor wage rates at 62.5c., 60c. and 45c. in the East, West and South respectively, continued to be received by the Walsh-Healey Government Contracts Board this week as

the board went ahead with plans to recommend the establishment of minimum rates on the basis of data received during and since the public hearings held on July 25-26. Typical comments in letters voicing protest to the board's move:

Central Iron & Steel Co., Harris-

burg—The recent virtual elimination of differentials between basing points, in combination with the drastic reduction in steel prices, makes it extremely difficult to see how these prices can be maintained without wage reductions.

Virginia Firm Fearful

Ross Structural Iron Works, Richmond, Va.—Owing to the change in basing points, Birmingham now has a favorable insight into the prospective tonnage in the State . . . any further penalty in wage rates would spell absolute disaster to the industry in Virginia as it would allow our competitors in the South to sell steel right in our own fabricating centers at a price below our costs.

McInnes Steel Co., Corry, Pa.—It would work a hardship on our small mill which is trying its best to carry on under present conditions.

Keystone Drawn Steel Co., Spring City, Pa.—As a non-integrated converter of black bar stock into cold finished steel bars, serving a limited district, we believe that an attempt to establish blanket wage scales effective for the whole steel industry and applying to our particular operations is an impossible and absurd procedure from an economic standpoint. . . . It would lessen our ability to compete in this district.

Henry Disston & Sons, Inc., Philadelphia—We are convinced it would work a great hardship on the smaller steel companies to have no differentials in the base labor rate within the same district . . . wages in the industry are now at artificial levels compared to activity and profits.

Rail Steel Bar Association, Chicago—Recent price reductions and changes in distribution methods have further emphasized these disadvantages to rail steel mills located, in most cases, away from large producing centers.

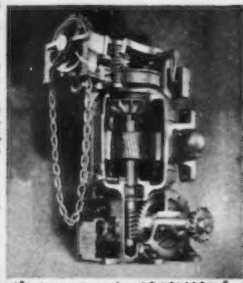
Others Protest

Meanwhile, letters of protests from Congressmen and Chambers of Commerce were added to the board's daily mail. The SWOC filed a brief indicating the common labor rates paid by mills with and without SWOC contracts. Briefly, these figures showed that in the Eastern district, where the union would have the board fix a minimum common labor wage rate of 62.5c. an hr., the SWOC contracts permit wages below this rate as follows:

Henry Disston & Sons, Inc., Philadelphia, 50c.; Eastern Rolling Mill Co., Baltimore, 53c.; Continental Steel Co., Kokomo and Indianapolis, Ind., and Canton, Ohio, 55c.; Andrews

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Steel Co., Newport, Ky., 56-58c.; Crucible Steel Co. of America, Harrison and Jersey City, N. J. and Syracuse, N. Y., 56.5c.; Lukens Steel Co., Coatesville, Pa., 56.5c.; Carnegie-Illinois Steel Corp., Johnstown, Pa., 58.5c.; and American Steel & Wire Co., Anderson, Ind., De Kalb and Joliet, Ill., and Duluth, Minn., 60c.

Board Finds Problem Simple

A check-up of board action taken on other industries where minimum wage rates based on prevailing wages have been fixed as the standard below which manufacturers are not permitted to go if they would continue to be eligible for Government business, indicates that the average time taken by the board before making its recommendations is about two and one-half months. In the case of the steel industry, to which board members refer as "the most important industry" yet considered, a minimum wage recommendation would be handed down around Sept. 1, board members have said. This would bring the effective date somewhere near Sept. 15, depending upon the Secretary of Labor, who issues the final wage order. Board members now take the position that, despite the importance of the industry and its complexity, the determination of minimum rate based on prevailing wages is relatively simple compared to some industries.

Belsterling Composes "March of Steel Men"

"MARCH of the Steel Men," an original composition for band by Charles S. Belsterling, vice-president, United States Steel Corp., was played last week at a concert in Gary, Ind., by the 100-piece Carillo band, composed of Carnegie-Illinois Steel Corp. employees in the Gary works and the sheet and tin mills.

SWOC Signs Contracts in 5 American Can Plants

CHICAGO.—The SWOC regional office reports that a contract covering five plants on the Pacific Coast has been signed by American Can Co. providing for sole bargaining rights, a 40-hr. week with time and a half for overtime and the same wage scale that prevailed before the contract went into effect. The plants are at Portland, Ore., San Francisco, Los Angeles, Oakland and Sacramento, Cal. International Harvester Co. has

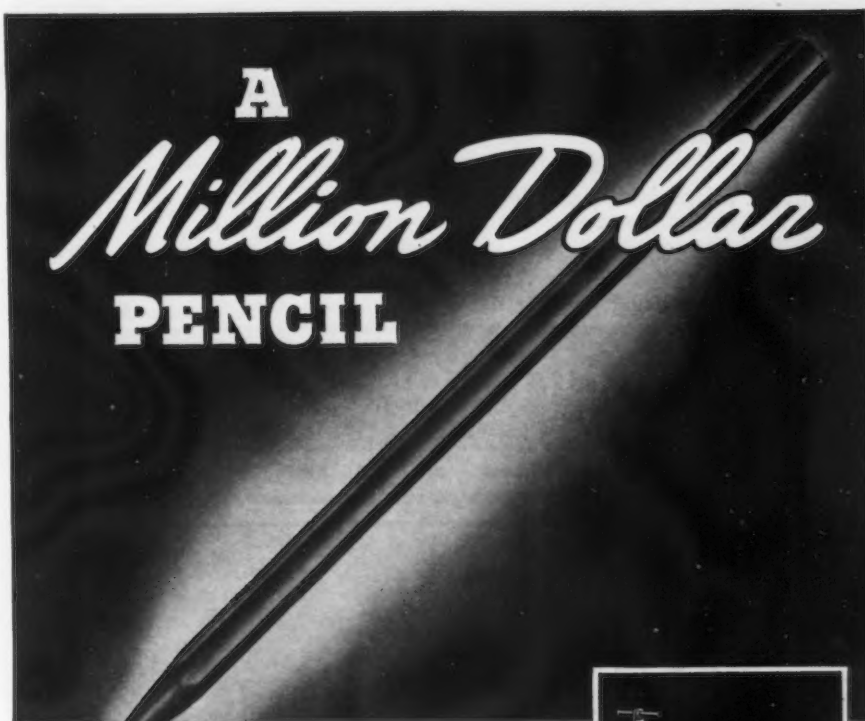
renewed a SWOC contract covering three ore mines in the Mesabi Range.

Van A. Bittner, regional SWOC director, has made a number of speeches in this district lately and plans a series of mass meetings, presumably to stimulate interest in union membership prior to the expected fall upturn in business.

At Ottawa, Ill., 550 employees of the Libbey, Owens, Ford Glass Co. have been made idle because of a CIO labor dispute. CIO members are picketing the plant to discourage the for-

mation of a rival AFL union. Picketing being in direct disagreement with the terms of a contract signed by the company, the management closed the plant when union heads refused to live up to these terms.

Meanwhile, in North Chicago, Ill., the scene of much labor trouble recently, CIO members were being fined for disorderly conduct in the Chicago Hardware Foundry strike three weeks ago. It was announced that the CIO will file a complaint with the Civil Liberties Committee.

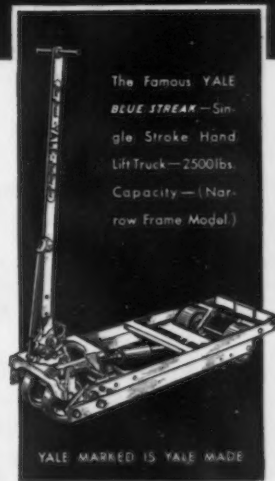


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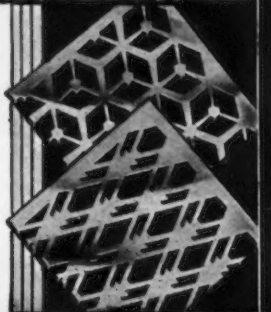


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Allegheny Ludlum Merger Approved

STOCKHOLDERS of Allegheny Steel Co. and Ludlum Steel Co. have approved the merger of the two companies into the Allegheny Ludlum Steel Corp., with plants at Brackenridge and West Leechburg, Pa., Watervliet and Dunkirk, N. Y., Wallingford, Conn., and Detroit.

Concentrated effort in development of the flat-rolled alloy field is one of the new company's objectives, W. F. Detwiler, chairman, and Hiland G. Batcheller, president, said in a statement which added that the high price of stainless steel has retarded consumption because the cost of manufacture has been spread over so small a total volume.

Merger of the two companies makes possible the development of greater volume in special lines with little or no duplication in facilities or products, the officials said.

Wright Aeronautical Corp. Leases More Space

WRIGHT AERONAUTICAL CORP., Paterson, N. J., has leased 39,000 sq. ft. of space in the factory of the Morrison Machine Co. on Madison Avenue, across the tracks from the main Wright engine plant. The Wright company will transfer its crankshaft department to this new space, which is about one-third of the Morrison plant. The move is part of a moderate expansion program which has been going on for the past half year, according to Myron B. Gordon, vice-president and general manager. The company is also proceeding with the completion of an extension to its assembly and test departments. The movement of the crankshaft department is largely a matter of internal rearrangement of facilities to obtain a smoother flow of production.

The Morrison Machine Co. will continue to use the remaining factory space for its own production purposes.

Hufnagel Reports Crucible Sales Increasing Sharply

CRUCIBLE STEEL CO. OF AMERICA's sales in July were encouragingly higher and orders taken in the first week of August showed a marked increase for the company, requiring operation of additional furnaces, F. B. Hufnagel, chairman, said.

\$17,500,000 Building Program is Planned By Youngstown S. & T.

YOUNGSTOWN SHEET & TUBE CO. this week revealed a \$17,500,000 expansion program which will increase ingot capacity by 240,000 tons at its Indiana Harbor plant, East Chicago, Ind.

A new 48-in. continuous hot sheet and strip mill and a continuous cold tin mill are to be constructed, the blooming mill rebuilt with a greater capacity, and additional finishing facilities installed at East Chicago. Improvements to be made on tube and wire mills and other equipment at the Campbell, Ohio, works will cost \$1,000,000.

In connection with the expansion the Youngstown company filed with the SEC a registration statement covering a \$30,000,000 issue of convertible debentures, due Sept. 1, 1948, and an undetermined number of shares of no par value common stock, including scrip certificates for fractional shares, to be reserved for conversion. Of the proceeds \$12,500,000 will be applied to bank loans and the balance for working capital and expansion.

Iran Contemplates Building An Iron and Steel Industry

LONDON (By Mail).—The Iran Government is understood to have approached representatives of the Brassert engineering group at Ankara with a view to the installation of blast furnaces and, generally, the creation of an iron and steel industry in Iran. The lines to be followed are those employed by the Karabuk works undertaken in Turkey by the Brassert concern.

The £3,000,000 contract for the erection of the Karabuk iron and steel plant, it will be recalled, was awarded to H. A. Brassert & Co., London, in 1936.

Germany Negotiating for Swedish Iron Mines

LONDON (By Mail).—The owners of the Smalands Taberg and Ulvoe iron mines in southern Sweden are seeking permission from the Swedish Government to sell the mines to a big German steel group. The mines have been idle for 60 years, but are claimed to contain about 300,000,000 tons of ore with an iron content of 25 to 30 per cent.



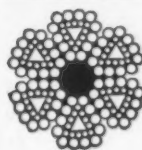
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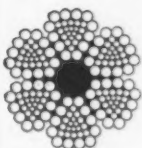
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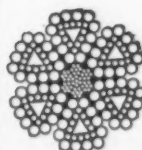
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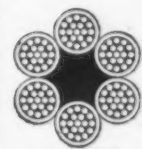
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Flattened Strand



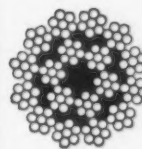
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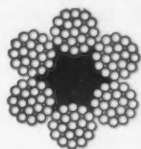
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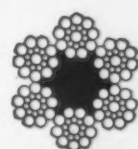
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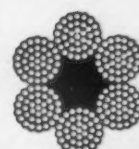
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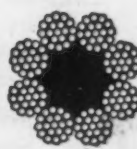
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6x37
Extra Flexible



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Extra Flexible

... THE NEWS IN BRIEF ...

Automobile output has passed 1938 low point; rising trend until November or later expected; Ford and Willys in production on new models. Page 50.

Youngstown Sheet & Tube Co. announces \$17,500,000 expansion program increasing ingot capacity at East Chicago, Ind., by 240,000 tons and installing there a new 48-in. continuous sheet-strip mill. Page 63.

Wheeling Steel Corp. contemplates a \$2,000,000 expansion program which would include a new sheet warehouse and galvanizing department.—Page 43.

Koppers gets hydrant order from Chicago.—Page 52.

Insulation blocks to be manufactured from spent pickle liquor will be produced by Sharon Steel Corp. with equipment recently installed at Sharon, Pa.

Four ore mines, idle since June 25, were to resume operations in the South on Aug. 16 for Tennessee Coal, Iron & Railroad Co., following an increase in the company's blast furnace activity.

Italy sets up a special distributing board which will monopolize the trade in scrap iron and steel.—Page 53.

Tom M. Girdler, Republic Steel Corp. chairman, acknowledges before the LaFollette Civil Liberties Committee that "some mistakes were made" during the Little Steel strike of 1937, declares that the New Deal is encouraging industrial strife and then proposes that the CIO itself be investigated for benefit of the public.—Page 54.

Contract totaling \$10,633,000 for four ships for the American Export Lines, Inc., has been awarded Bethlehem Shipbuilding Corp., Ltd., of Quincy, Mass., by the Maritime Commission.—Page 58.

High freight rates are crippling the South, the country's "greatest untapped market,"

President Roosevelt is told by the National Emergency Council.—Page 58.

United States Tariff Commission offers 527-page survey of international trade and production of iron and steel.—Page 58.

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CONVENTIONS

- Sept. 26 to 30—Association of Iron and Steel Engineers, Cleveland.
- Oct. 10 to 14—American Institute of Steel Construction, French Lick Springs, Ind.
- Oct. 12 to 14—Porcelain Enamel Institute, University of Illinois, Urbana, Ill.
- Oct. 12 to 15—The Electrochemical Society, Rochester, N. Y.
- Oct. 13 to 15—Society of Automotive Engineers, aircraft production meeting, Los Angeles.
- Oct. 17 to 21—National Metals Congress, Detroit.
- Oct. 17 to 20—American Institute of Mining and Metallurgical Engineers, Detroit.

Republic issues map clarifying new prices.—Page 58.

More small steel producers and fabricators protest to the Public Contracts Board at Washington against a move by the SWOC to freeze steel pay rates at or above existing levels.—Page 60.

American Can Co. signs SWOC contract covering employees in five Western plants.—Page 61.

Charles S. Belsterling, a vice-president of United States Steel Corp., last week heard his "March Of the Steel Men," an original composition, played by 100 Chicago district steel workers.—Page 61.

Stockholders of Allegheny Steel Co. and Ludlum Steel Co. approve a merger of the two organizations into the Allegheny Ludlum Steel Corp.—Page 62.

Orders are increasing in August for Crucible Steel Co. of America, F. B. Hufnagel, chairman, reports.—Page 62.

Wright Aeronautic Corp. leases more space.—Page 62.

Large German steel group seeks to buy Swedish iron mine that has been idle 60 years.—Page 63.

Ford steel plant operating all mills.—Page 70.

Finished steel shipments by United States Steel Corp. subsidiaries in July dropped 36,487 tons under June to a total of 441,570 tons, while shipments to date this year are 3,451,924 tons against 8,810,026 tons in the like period of 1937.—Page 84.

Orders for machine tools jumped 28 per cent in July over June, largely due to foreign buying.—Page 94.

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USE WHITNEY CHAINS

Men who specify power drives know that Whitney Chains can take hold on a routine job or on a high speed 24-hour-a-day-grind, keep production up to the mark—and stick with the job *longer*. They are always sure of full machine capacity whenever Whitney Chains are installed.

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..PERSONALS..

W. R. PHIBBS has been appointed assistant to the president, Jones & Laughlin Steel Corp. He has been with J. & L. since 1936, engaged in special work, and was formerly general manager of operations of the Columbia Steel Co., San Francisco. His entire business experience has been in the iron and steel industry.

GEORGE C. CONGDON has resigned

as manager of advertising. Jones & Laughlin Steel Corp., Pittsburgh, to become associated with Townsend & Townsend, Inc., Rockefeller Plaza, New York, which is engaged in advertising evaluation. Mr. Congdon was with Jones & Laughlin nine years, before which time he was associated with W. S. Hill Co., a Pittsburgh advertising agency.

RALPH FRY, previously with the Standard Sanitary Mfg. Co., has been

added to the staff of the Ferro Enamel Corp., Cleveland.

HARRY O. MUNN, heretofore chief service engineer for the Lindberg Engineering Co., Chicago, has been placed in charge of the newly opened Buffalo office of the company at 220 Delaware Avenue.

CHARLES C. GRANT has been appointed district representative in northern Ohio for R. D. Wood Co., Philadelphia, succeeding the late Thomas S. Goslin.

LAWRENCE S. ROEHM has been appointed manager of Jones & Laughlin Steel Corp. Detroit warehouse, succeeding F. A. WITTMAN, who has resigned. Mr. Roehm has been assistant



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W. R. PHIBBS

manager of the warehouse since 1929 when the property was purchased by Jones & Laughlin from Roehm & Davison. He was graduated from the University of Michigan in 1916, after which he entered the employ of Roehm & Davison as a salesman. During the World War he served as second lieutenant in the 77th Division and later as first lieutenant in the 78th Division. After the Armistice he reentered Roehm & Davison as secretary and manager of sales, holding that position until he became assistant manager of the warehouse.

PERCY D. PECK has been appointed manager of the metal trim depart-



L. S. ROEHM

ment, Milcor Steel Co., Milwaukee. Mr. Peck has spent 28 years in the production, design and sale of interior metal trim, and until recently was vice-president and general manager of Knapp Brothers Mfg. Co. in charge of sales, promotion and manufacturing.



F. L. SUTER has been elected first vice-president, Armstrong Cork Co., Lancaster, Pa., succeeding the late Hugh M. Clarke. Mr. Suter was formerly vice-president and treasurer and entered the employ of the company in 1900 as assistant billing clerk in the



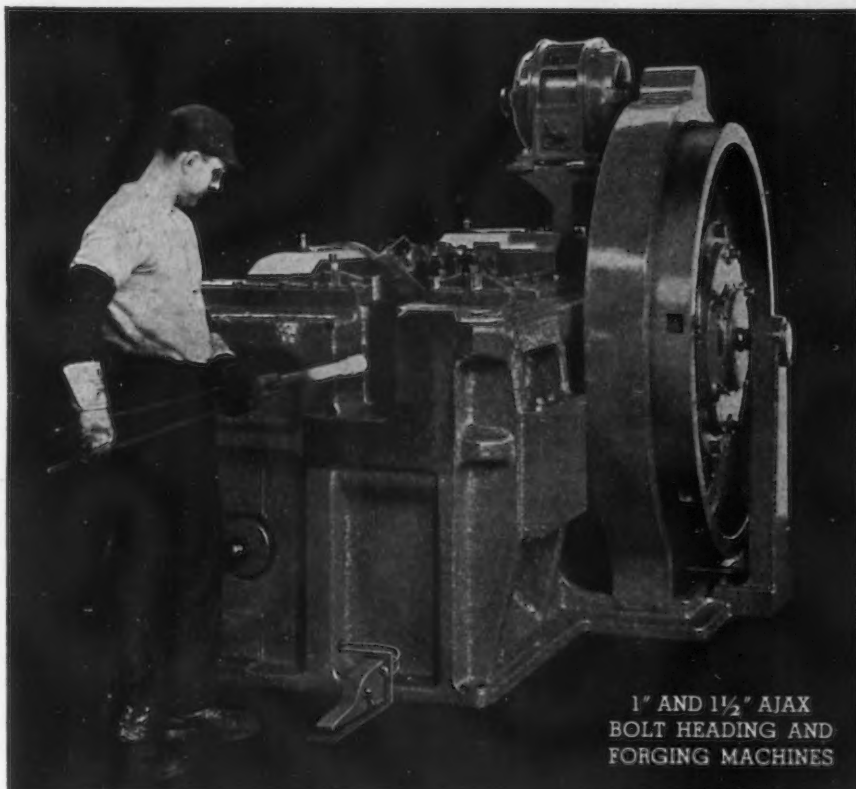
P. D. PECK

general offices at Pittsburgh. KEITH POWLISON has been appointed treasurer and a director.



L. CLIFFORD GOAD, who has been general manufacturing manager of the AC Spark Plug division of General Motors Corp., has been appointed general manager of the division, succeeding FRED S. KIMMERLING, who has been on leave of absence because of ill health. Mr. Goad has been identified with the AC division since 1933.

LOUIS F. DAVIS, formerly of Philco Radio & Television Corp., has been elected vice-president and treasurer of the McAleer Mfg. Co., Detroit. He will also act as general manager. A. G. NEUBAUER is in charge of sales to distributors, and C. J. KENNEDY is in charge of sales to manufacturers. F. A. WEIHE, JR., has been made factory manager and ERNEST HUMMICH, purchasing agent and advertising manager.



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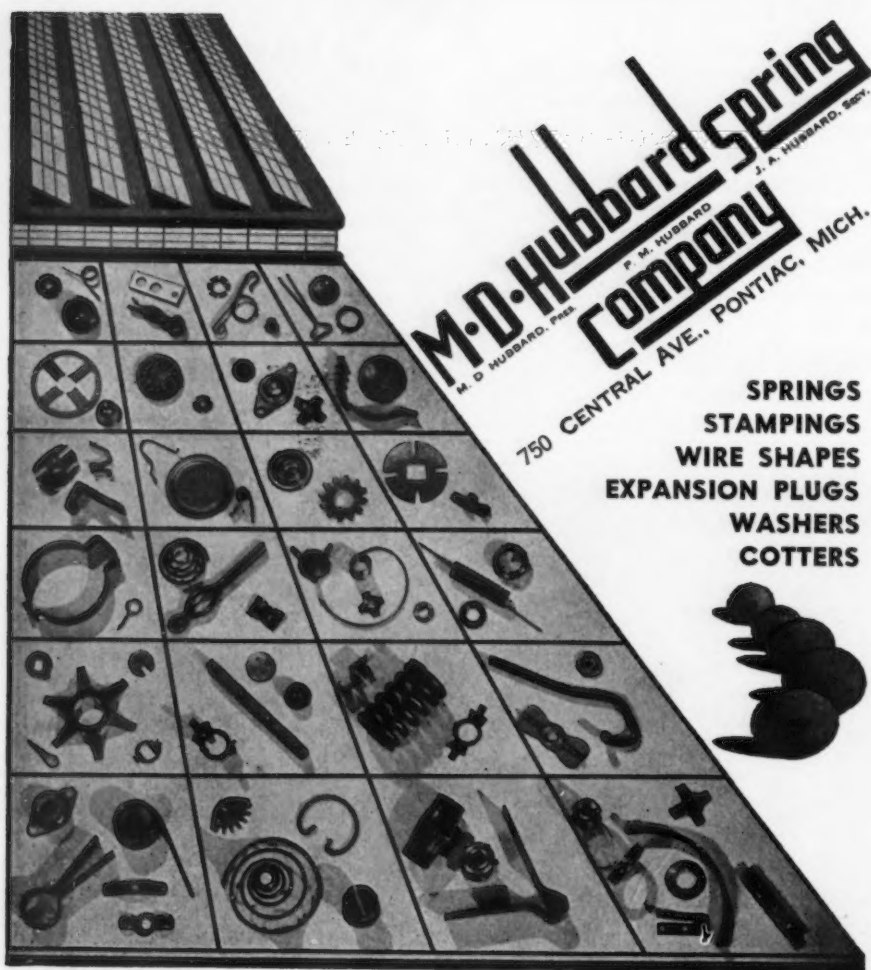
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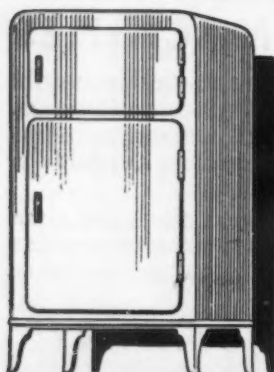
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...OBITUARY...

FINLEY P. MOUNT, president, Advance-Rumely Corp., farm equipment manufacturer, died last week at Burt Lake, Mich., aged 71 years. A former president of the Farm Equipment Institute, Mr. Mount had been ill for some time and was planning to retire from active business soon. He was named receiver for the Rumely company in 1915, becoming president a year later.

♦ ♦ ♦

GEORGE C. PHILLIPS, 51 years old, production standards engineer of the Fisher Body Pontiac plant since 1935, was buried Aug. 12 at Lansing, Mich. Mr. Phillips had been connected with General Motors Corp. for 12 years. He was with the export division in Europe and South America for six years.

♦ ♦ ♦

CHARLES U. STEPHENS, assistant chief engineer of the Thompson Products Co., was buried at Detroit, Aug. 10. He was born in Somerville, Ohio, 44 years ago. He was a graduate of Miami University, Oxford, Ohio, and a mechanical engineer. He had been a resident of Detroit for 26 years and was a member of the Engineering Society of Detroit and the American Society for Metals.

♦ ♦ ♦

GEORGE E. MOORE of Wyandotte, Mich., died in Henry Ford Hospital last week. He had been superintendent of the J. B. Ford Co., Wyandotte, for 36 years. He started work with the company as a stationary engineer in 1898. He was 69 years old.

♦ ♦ ♦

HENRY LAIDLAW, for many years sales manager of the Detroit district office of the Worthington Pump & Machinery Corp., Harrison, N. J., died of heart disease in Kingsville, Ont., Canada, on June 25, aged 78 years.

♦ ♦ ♦

THOMAS S. GOSLIN, assistant sales manager of the machinery division of R. D. Wood Co., Philadelphia, died of heart disease in Allentown, Pa., aged 56 years. He had been associated with the company for over 33 years.

♦ ♦ ♦

ROBERT H. HILL, president of the Hill Bolt Corp., was buried in Detroit on Aug. 10. He died at his home after a long illness. Born in Plantsville, Conn., 60 years ago, Mr. Hill

went to Detroit in 1915 from Cleveland, where he had been secretary of the Upson Nut Co. After serving as vice-president and general manager of the American Nut Co. in Detroit, he founded his own firm.



WILLIAM H. J. FITZGERALD, in recent years prominently identified with the machine tool industry, died Aug. 9, at the Weymouth Hospital, Weymouth, Mass., following a brief illness. Mr. Fitzgerald was born in New York 71 years ago. His business life started as a salesman. Later he became purchasing agent of the United Shoe Machinery Co., Beverly, Mass. Subsequently he engaged in the selling of machine tools, first in the Fort Hill district of Boston, and later in South Boston. While engaged in this business he became interested in pneumatic machinery and recently became president and manager of the Pneumatic Drop Hammer Co., Braintree, Mass., his home town.



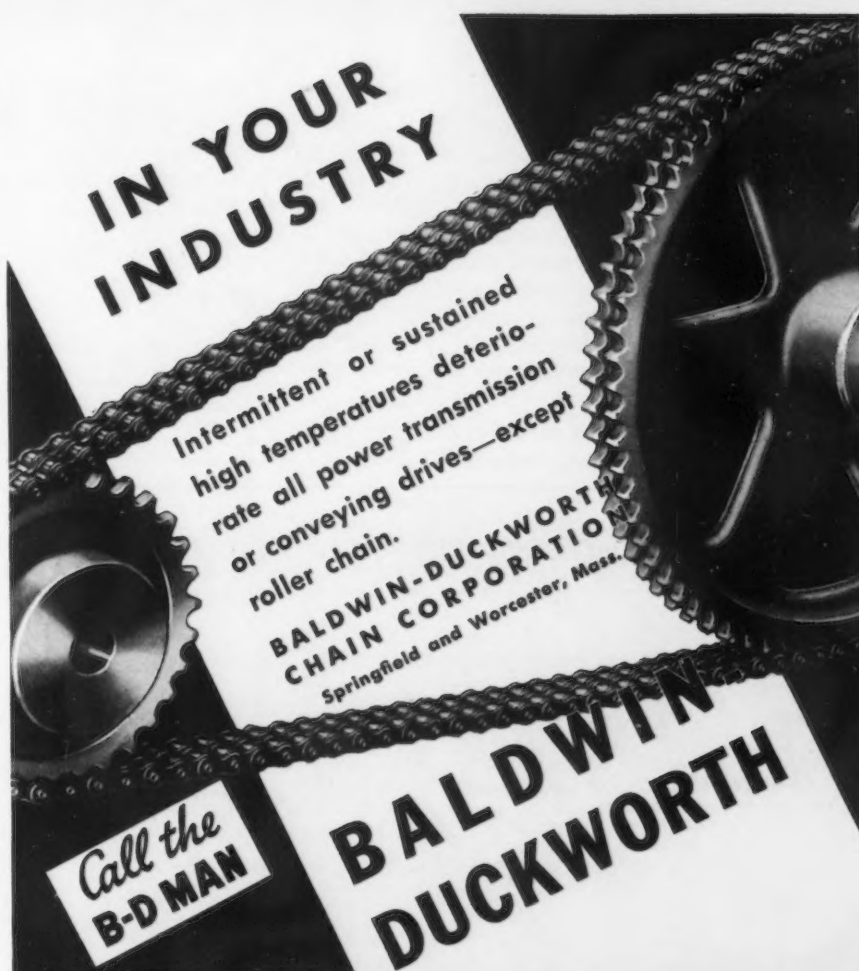
CHARLES WETHERBEE, former vice-president and superintending engineer of the old Bath Iron Works, Ltd., Bath, Me., died suddenly Aug. 10. Mr. Wetherbee was born in Detroit 67 years ago, was graduated from the Massachusetts Institute of Technology in 1891, and from Ecole d'Application du Geni Maritime of Paris in 1894. The following year he was associated with the Newport News Shipbuilding & Dry Dock Co. and the Columbian Iron Works, Baltimore, in 1896. Later he went to the Bath, Me., works. During the War he served in an advisory capacity to the board of engineers of the Navy Department, and until his retirement two years ago was consulting engineer of the Westinghouse Electric & Mfg. Co. and of the Bethlehem Steel Co.'s shipyard division.



WILLIAM J. ROSSMAN, superintendent of the yards department in charge of railroad transportation, Inland Steel Co., died last week in East Chicago, Ind., aged 60. Mr. Rossman had served as yard superintendent since the plant was established 33 years ago. Active in civic affairs, Mr. Rossman was president of the Indiana State Park Association, a member of the East Chicago park board for 15 years, and of the Chamber of Commerce.



R. K. BOGGS, general purchasing agent for Andrews Steel Co. and Newport Rolling Mill Co., Newport, Ky., died on Aug. 9, following an ill-



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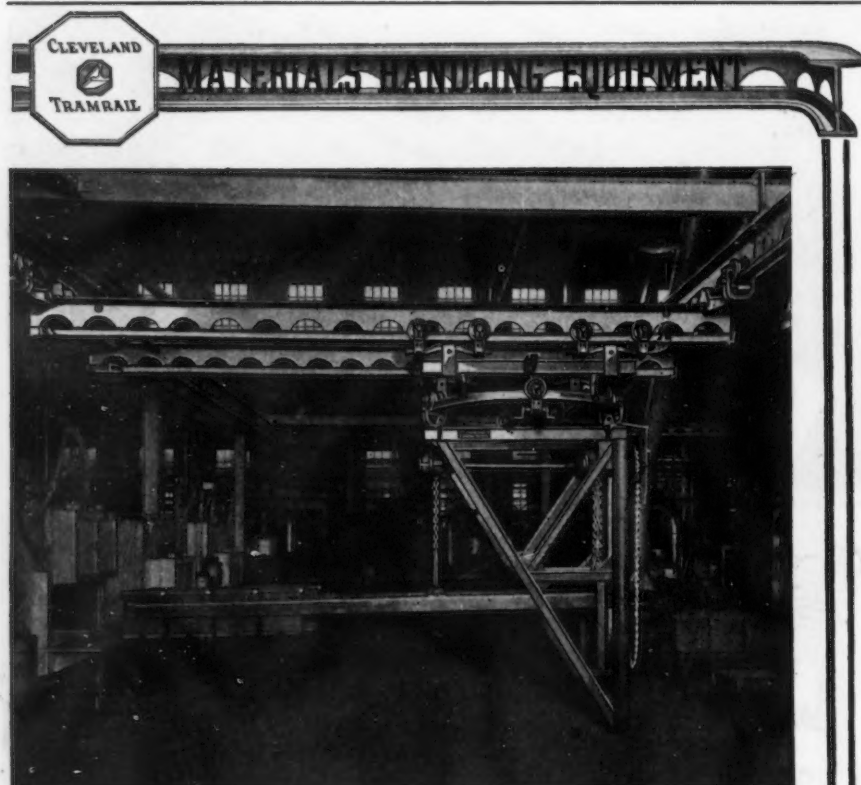
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ness of several months. Mr. Boggs was a water boy for the construction firm which built the company's plants and when completed, he was the first office boy. He rose through various departments during his 30 years association with the companies to the general purchasing position he held at his death. He was a member of many organizations, including the National Association of Purchasing Agents.

♦ ♦ ♦
 WILLIAM H. WILKINSON died Aug. 8 in a Framingham, Mass., hospital.

He was born in Holyoke, Mass., 86 years ago, went to Boston in 1885 where he operated a foundry for many years, later acquiring an oiling device business. He retired from business in 1925

Omer E. Robbins Co., 635 Mt. Elliott Avenue, Detroit, has appointed C. D. Proctor Co., 30 Church Street, New York, as exclusive sales representative in the New York area for the company's Magna-Sine, a magnetic chuck on sine bar principles to grind single or compound angles.



● For heat treating furnace charging, Cleveland Tramrail has developed several types of equipment. This one a Rotating Heat Treating Furnace Charger. Cold Heat Treating Pots are picked up from the roller conveyor; the charging unit rotated 180 degrees; the complete unit is then lined up with the proper furnace door and locked into position. Hot charges are returned to another conveyor line by reverse motion.

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....PIPE LINES....

Magnolia Petroleum Corp., Magnolia Building, Dallas, Tex., plans new 4-in. welded steel pipe line from properties in Vermillion, La., oil field to point on Mermentau River, for crude oil transmission to bulk terminal to be constructed at latter place, with barge-loading facilities for transportation to company refinery. Pumping station will be installed for booster service.

Henderson, Ky., plans extensions and replacements in pipe lines for municipal natural gas distribution, requiring about 188,000 lin. ft. of 6, 4 and 2-in. pipe, three regulator stations and other operating facilities. Cast iron pressure pipe of sizes noted will be considered. Cost about \$200,000, of which \$90,818 has been secured through Federal grant. Westcott & Thornton, Gary Building, Owensboro, Ky., are consulting engineers.

Bureau of Reclamation, Denver, asks bids until Aug. 24 for one plate-steel discharge manifold and appurtenances for pumping plant at Glendive, Buffalo Rapids project, Mont.; also for plate-steel penstock and steel discharge pipe and appurtenances for Succor Creek pumping station No. 2, Owyhee project, Oregon-Idaho (Specifications 1111-D).

Consumers Power Co., Jackson, Mich., plans pipe line for natural gas distribution at Edmore, Montcalm County, Mich., including welded steel pipe lines from Six Lakes gas field area, about six miles.

United Gas Pipe Line Co., Houston, Tex., plans new 6-in. welded steel pipe line under Bayou Nezpique, near Mermentau, Acadia County, La., for natural gas transmission, connecting with main pipe line system in that district.

Big Lake, Tex., plans pipe lines for natural gas distribution, including main 3-in. welded steel pipe line connecting with system of Texas Public Service Co., which will furnish supply. Financing is being arranged through Federal aid.

Ministry of National Defense, Government of France, Paris, has authorized construction of new welded steel pipe line from Danges, near St. Nazaire, to Montargis, near Orleans, in Loire Valley area, about 280 miles, for gasoline transmission. Cost over \$2,500,000 with booster stations and other operating facilities.

Ford Steel Plant Operating All Mills

DETROIT.—With all mills running at the Ford Motor Co., production of finished steel is under-way for fall requirements. About 400 men are working five days a week in the Rouge steel plant. Three open hearth furnaces which were put into operation Aug. 8 are continued in service.

Railroad Sells 300 Cars, 8 Engines to Dealer

IRON & STEEL PRODUCTS, INC., East 135th Street, Chicago, has just purchased 300 50-ton all steel double hopper cars, and also two passenger and six freight locomotives, from the Pittsburgh & Shawmut Railroad, Kittanning, Pa.

W. P. Snyder & Co. Celebrates 50 Years in Ore and Pig Iron Trade

PITTSBURGH.—Although industrial conditions during the past few decades have brought about a multitude of changes in the iron and steel industry due to mergers, absorptions and liquidations, W. P. Snyder & Co., Pittsburgh, founded in 1888 by the late William Penn Snyder, iron and steel pioneer, has grown steadily since its formation and this week celebrates its 50th anniversary.



Courtesy of Writers Press Association
W. P. SNYDER, JR.

Exclusively an iron brokerage business in the beginning, W. P. Snyder & Co. and its affiliates continually expanded until they became dominantly interested in the mining and shipping of ore, mining and coking of coal, production and sale of pig iron, production of ingot molds and castings, and the manufacture of centrifugally cast, non-ferrous and special iron alloys.

Guiding the business until his death in 1921, William Penn Snyder, although interested in a host of other iron and steel undertakings, found time to bring the Snyder company to its well integrated condition.

The late Mr. Snyder's interest in his own undertakings was so great that some years after the formation of the United States Steel Corp., he declined the offer to become president of that concern. The nucleus of the present W. P. Snyder & Co. was formed

in 1880 when William Penn Snyder formed a partnership with John G. A. Leishman, who, like Mr. Snyder, had previously worked in the Schoenberger & Co. pioneer iron manufacturing firm of Pittsburgh. Mr. Snyder purchased Mr. Leishman's holdings in

1888 when the latter was offered an interest in the Carnegie Steel Co.

Having been a close associate of Henry W. Oliver, Mr. Snyder was particularly active with the former in clearing the way for the immense production of Lake Superior iron ore. In fact, to Oliver and Snyder went the credit of being the first men to use 100 per cent Mesabi ore in a blast furnace when others thought it impossible. After Mr. Oliver's death in 1904, Mr. Snyder turned practically his entire



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The modern motor bus has "lines", and Parish created some of them. Take this wheel housing for example. A good stamping job involving a smooth 3" draw in steel .078" thick. The outside curve is 25 3/4" radius.

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efforts toward the development of the Shenango Furnace Co.

With large ore holdings in the Northwest, blast furnaces, coal mines, and coke works in western Pennsylvania, Mr. Snyder proceeded, between 1906 and 1912, to build a fleet of Lake carriers to bring the ore to his plants in western Pennsylvania, thus completing the integration of his enterprises.

The Snyder Mining Co., a W. P. Snyder & Co. affiliate, owns and oper-

ates iron ore properties in Minnesota. Reserves approximate 20,000,000 tons, with a capacity for producing iron ore of approximately 1,500,000 tons a year.

The Shenango Furnace Co. Pittsburgh, has in operation three large ore boats, one with a capacity of 12,000 tons and the other two 14,000 tons each. Two blast furnaces with a combined total annual capacity of 400,000 tons of pig iron are situated at Sharpsville, Pa.

Coal and coke properties are situated at Wilpen, Westmoreland County, Pa., with an annual capacity of 400,000 tons of coal and 90,000 net tons of beehive coke.

The Shenango-Penn Mold Co., Pittsburgh, another affiliate, manufactures ingot molds, stools, and heavy castings, with a capacity of approximately 180,000 tons of ingot molds a year. The plants are situated at Sharpsville, Pa., adjoining the blast furnaces. Centrifugally cast, non-ferrous, and special iron alloys are manufactured at Dover, Ohio, which plant has a capacity of 3,000,000 lb. a year.

W. P. Snyder, Jr., Heads Company

William P. Snyder, Jr., son of the founder and president of the W. P. Snyder & Co. and the Shenango Furnace Co., after completing college in 1911, entered the business as a clerk. He spent considerable time learning the practical aspects of the various companies from the mining of ore, through the manufacture of iron, to the sale of the products.

After his practical training in various phases of the business, W. P. Snyder, Jr., returned to Pittsburgh as assistant to the president, the late W. P. Snyder, and later was made vice-president in charge of operations, and in May, 1918, was elected president of the Shenango Furnace Co., Pittsburgh, which position he now holds.

Other officers of the company are: Vice-president, George L. Collord; secretary, H. M. Wilson; treasurer, F. A. Demms. They also are officers of the Shenango-Penn Mold Co., except that Mr. Snyder is chairman of the Shenango-Penn Mold Co., and H. S. Bradley is president. C. D. Dyer, until he retired Dec. 31, 1927, was vice-president of the parent company.

In 1927 William P. Snyder, Jr., purchased the Penn Mold & Mfg. Co. of Dover, Ohio, ingot mold manufacturers, and formed the Shenango-Penn Mold Co.

The Snyder Mining Co., of which he is president, was formed in 1929 and is a large producer of iron ore from the Lake Superior district. W. P. Snyder & Co. and its affiliates are one of the few enterprises in the iron and steel industry which have been able to maintain their independent and integrated position in the face of important changes which have occurred since the company was founded in 1888.



PRODUCTS
Steel Castings
Forgings
Rolled Wheels
Heavy Springs
Rolled Rings
Gear Blanks

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HEAVY FORGINGS**

Standard is a prompt source of supply for heavy forgings whether they be relatively simple like this 5,600 lb. forged ball drop or more complex like the 14,300 lb. forged crankshaft pictured here.

Standard's forgings and castings, too, are made from open hearth steel produced under close metallurgical control in our own furnaces.

STANDARD STEEL WORKS CO.
Subsidiary of the
Baldwin Locomotive Works
BURNHAM PENNA.

STANDARD

REINFORCING STEEL

**... Awards of 4415 tons;
6265 tons in new projects.**

1000 Tons, Wappapello, Mo., dam, St. Francis River, to Inland Steel Co., Chicago, through Hallett Construction Co., Minneapolis.

385 Tons, Odair, Wash., Columbia Basin project (Invitation A38104A and A38109A), to Carnegie-Illinois Steel Corp., Pittsburgh.

337 Tons, New York, Treasury Department, to Concrete Engineering Co., Jersey City, N. J.

300 Tons, Bedford, Mass., Veterans' Hospital, to Northern Steel Co., Boston.

250 Tons, Los Angeles, county purchasing agent, Specification 7900, to Trojan Steel Co., Los Angeles.

222 Tons, Ignacio, Colo., Pine River project (Invitation A 32060 A) to Colorado Fuel & Iron Co., Pueblo, Colo.

208 Tons, San Diego, Cal., Navy store houses, Specification 8868 to Consolidated Steel Co., Los Angeles.

204 Tons, Colfax, Cal., highway overpass, to Soule Steel Co., San Francisco.

188 Tons, Corona, Cal., Santa Fe railway location for highway, to Gilmore Fabricators, Inc., San Francisco.

175 Tons, Washington, Benjamin Banneker Junior High School, to Bethlehem Steel Co., Bethlehem, Pa., through Bahen & Wright, Inc., Washington, general contractors.

173 Tons, Manchester, N. H., armory, to Truscon Steel Co., Boston.

164 Tons, Los Angeles County, Cal., bridge extension over Arroyo Seco Parkway, to Trojan Steel Co., Los Angeles.

161 Tons, Orange, Cal., Santiago Creek bridge, to Trojan Steel Co., Los Angeles.

150 Tons, Erie, Pa., St. Vincent's Hospital, to Republic Steel Corp., Cleveland, through Patterson-Leitch Co., Cleveland; Henry Schenk Co., Erie, Pa., contractor.

142 Tons, San Jose, Cal., supplies for city purchasing agent, to San Jose Steel Co., San Jose, Cal.

129 Tons, Los Banos, Cal., San Joaquin River bridge, to Truscon Steel Co., San Francisco.

128 Tons, Contract MHT-28, Lincoln Tunnel Approach, Weehawken, N. J., to Truscon Steel Co., Youngstown, through Joseph L. Sigretto Co., New York, contractor.

100 Tons, Longvale, Cal., Eel River highway bridge, to Ceco Steel Co., San Francisco.

NEW REINFORCING BAR PROJECTS

3817 Tons, Odair, Wash., Columbia Basin project (Invitation A 38122 A) Bethlehem Steel Co., low bidder.

1215 Tons, bridge across Mississippi River from East St. Louis, Ill., to St. Louis; general contract awarded to G. L. Tarlton Construction Co., St. Louis, subject to PWA approval.

600 Tons, Brooklyn, N. Y., subway, Section 9, Route 110.

565 Tons, Los Angeles, Department of Water and Power, Spec. 2713, bids taken Aug. 16.

534 Tons, Muncie, Ind., sewage disposal plant, L. C. Love, Akron, Ohio, low bidder.

500 Tons, Savannah, Ill., powder magazine, Midwest Construction Co., Chicago, low bidder on general contract.

500 Tons, Dallastown, Pa., highway project, G. A. & F. M. Wagner, Inc., low bidder.

412 Tons, San Francisco, for United States Engineer at Fort Cronkhite (Invitation No. 86803969); bids Aug. 19.

368 Tons, Albuquerque, N. M., State highway bridges; general contracts awarded.

400 Tons, Rockaway Beach, N. Y., grade elimination.

319 Tons, Norfolk, Va., naval base depot, bids Aug. 19.

150 Tons, Coldwater, Mich., dormitory hospital.

104 Tons, Calexico, Cal., All American Canal (Invitation B 42210 A); bids Aug. 19.

100 Tons, Richmond, Cal., post office, James I. Barnes Construction Co., Santa Monica, Cal., low bidder on general contract.

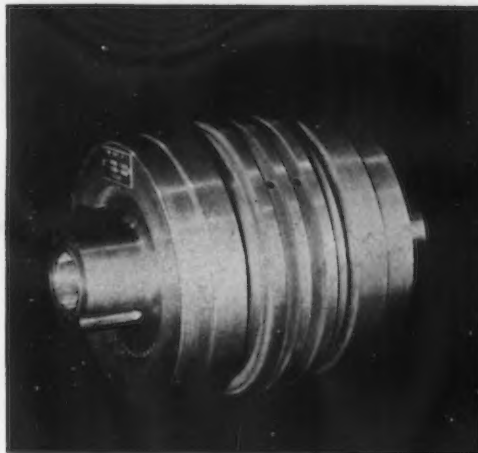
100 Tons, Oakland, Cal., Mountain Boulevard drainage structures; McDonald & Kahn, Co., Inc., San Francisco, low bidder on general contract.

100 Tons, Valley Falls, N. Y., highway project No. PSC 7290-8520, Fitzgerald Brothers Construction Co., Inc., Troy, N. Y., low bidder.

100 Tons, Pittsburgh, Campbell's Run Road.

100 Tons, Kittery, Me., bridge, Badger Island.

100 Tons, Wilmington, Cal., transit shed berth 181, Wm. P. Neil Co., Inc., Los Angeles, low bidder on general contract.



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Steel Output by Products in Second Quarter

PRODUCTION of semi-finished and finished steel during the second quarter, not including shipments to other members of the industry for further conversion, totaled 4,060,705 gross tons, equal to 33.7 per cent of the industry's capacity, according to the quarterly report (Form 10) of the American Iron and Steel Institute. In the first half the total was 8,064,934 gross tons, equal to 33.5 per cent of capacity.

Tin mill products made the best showing despite the fact that they, too, are much below normal. Second quarter output of black plate was 53.4 per cent of capacity, hot rolled tin plate output was 44.6 per cent of capacity, and cold reduced tin plate output was 41.1 per cent.

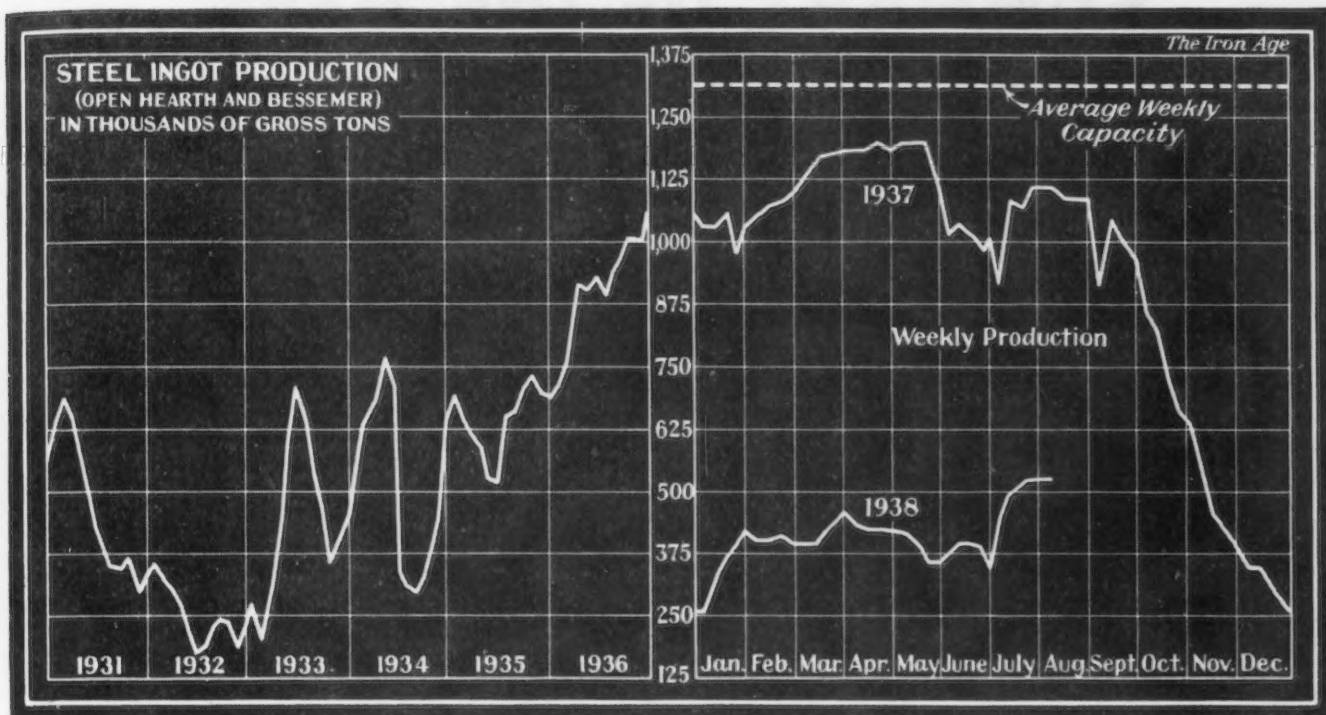
Detailed figures on all products are shown in the accompanying table.

AMERICAN IRON AND STEEL INSTITUTE										Second Quarter - 1938									
Capacity and Production for Sale of Iron and Steel Products										PRODUCTION FOR SALE—GROSS TONS									
		Number of companies	Items	Annual Capacity Gross tons	Current Quarter				To Date (6 Months 1938)										
					Total	Per cent of capacity	Shipments		Total	Per Cent of capacity	Shipments								
							Export	To members of the industry for conversion into further finished products			Export	To members of the industry for conversion into further finished products							
STEEL PRODUCTS	Ingot, blooms, billets, slabs, sheet bars, etc.	29	1	xxxxxx	320,721	xxx	32,576	196,092	673,282	xxx	107,482	345,552							
	Heavy structural shapes	8	2	4,557,100	318,237	27.3	22,157	-	626,082	26.9	40,142	xxxxxx							
	Steel piling	3	3	234,500	25,399	43.3	674	-	44,115	37.6	2,018	xxxxxx							
	Plates—Sheared and Universal	20	4	5,992,710	310,233	20.7	28,973	1,005	622,070	20.8	67,316	2,323							
	Skeps	6	5	xxxxxx	74,829	xxx	3,550	42,562	149,513	xxx	5,513	99,574							
	Rails—Standard (over 60 lbs.)	4	6	3,395,000	161,910	19.1	2,180	-	361,488	21.3	15,583	xxxxxx							
	Light (60 lbs. and under)	6	7	436,500	6,809	6.2	1,043	-	18,942	8.7	3,673	xxxxxx							
	All other (Incl. girder, guard, etc.)	2	8	105,000	7,067	26.9	2,226	-	9,944	18.9	3,494	xxxxxx							
	Splice bar and tie plates	14	9	1,310,050	65,113	19.9	730	-	121,782	18.6	1,823	xxxxxx							
	Bars—Merchant	37	10	xxxxxx	350,803	xxx	28,122	35,617	705,251	xxx	58,244	85,621							
	Concrete reinforcing—New billet	15	11	xxxxxx	144,547	xxx	7,050	-	257,956	xxx	15,383	xxxxxx							
	Re-rolling	19	12	xxxxxx	33,593	xxx	2,418	-	58,490	xxx	4,057	xxxxxx							
	Cold finished—Carbon	18	13	xxxxxx	48,446	xxx	911	-	101,209	xxx	3,639	xxxxxx							
	Alloy—Hot rolled	15	14	xxxxxx	61,856	xxx	3,339	7,727	117,419	xxx	6,725	15,104							
	Cold finished	14	15	xxxxxx	5,668	xxx	165	-	11,174	xxx	433	xxxxxx							
	Hoops and baling bands	5	16	xxxxxx	12,681	xxx	420	-	24,453	xxx	764	xxxxxx							
	TOTAL BARS	56	17	11,547,881	657,594	22.8	42,425	43,344	1,275,952	22.1	89,245	100,725							
	Tool steel bars (rolled and forged)	15	18	101,014	3,315	13.1	174	-	7,424	14.7	196	xxxxxx							
	Pipe and tube—B. W.	16	19	1,756,943	127,240	29.0	4,329	-	224,212	25.5	8,981	xxxxxx							
	L. W.	11	20	1,453,028	62,323	17.2	2,221	-	142,193	19.6	6,546	xxxxxx							
	Electric weld	4	21	614,000	27,875	18.2	1,450	-	60,783	19.8	7,026	xxxxxx							
	Seamless	14	22	2,942,900	251,355	34.2	18,346	-	508,739	34.6	45,748	xxxxxx							
	Conduit	7	23	155,270	10,084	26.0	368	-	18,356	23.6	698	xxxxxx							
	Mechanical Tubing	5	24	189,000	12,334	26.1	1,159	-	25,165	26.6	2,279	xxxxxx							
	Wire rods	18	25	xxxxxx	82,978	xxx	7,866	32,453	150,680	xxx	17,399	54,877							
	Wire—Drawn	38	26	1,541,984	176,736	36.4	13,722	2,704	329,650	33.9	22,412	4,555							
	Nails and staples	19	27	1,078,572	102,085	37.9	6,684	-	191,363	35.5	11,153	xxxxxx							
	Barbed and twisted	16	28	425,477	39,612	37.2	8,574	-	66,143	31.1	12,187	xxxxxx							
	Woven wire fence	15	29	702,825	49,269	28.0	400	-	99,333	28.3	601	xxxxxx							
	Bale ties	11	30	110,677	11,244	40.6	180	-	18,267	33.0	180	xxxxxx							
	All other wire products	4	31	23,600	799	13.5	3	-	1,758	14.9	4	xxxxxx							
	Fence posts	14	32	147,100	14,105	38.4	287	-	23,517	32.0	484	xxxxxx							
	Black plate	12	33	503,015	71,554	56.9	1,809	23,023	134,299	53.4	3,875	41,687							
	Tin plate—Hot rolled	11	34	1,631,956	173,552	42.5	36,291	-	363,802	44.6	106,406	xxxxxx							
	Cold reduced	10	35	1,828,100	209,692	45.9	14,011	-	375,464	41.1	28,694	xxxxxx							
	Sheets—Hot rolled	19	36	xxxxxx	176,798	xxx	20,435	1,749	348,362	xxx	45,314	2,974							
	Hot rolled annealed	20	37	xxxxxx	179,672	xxx	9,133	73	345,420	xxx	22,015	150							
	Galvanized	15	38	xxxxxx	187,727	xxx	20,619	-	357,336	xxx	40,378	xxxxxx							
	Cold rolled	19	39	xxxxxx	188,312	xxx	18,981	-	419,066	xxx	43,221	xxxxxx							
	All other	15	40	xxxxxx	48,258	xxx	3,117	-	98,971	xxx	6,767	xxxxxx							
	TOTAL SHEETS	26	41	10,444,353	780,767	29.9	72,285	1,822	1,569,155	30.0	157,695	3,126							
	Strip—Hot rolled	25	42	3,283,200	165,594	20.2	5,763	14,133	336,689	20.5	18,969	30,450							
	Cold rolled	37	43	1,178,961	65,157	22.1	2,715	-	126,916	21.5	4,464	xxxxxx							
	Wheels (car, rolled steel)	5	44	380,319	12,551	13.2	954	-	26,790	14.1	1,289	xxxxxx							
	Axles	4	45	425,900	6,912	6.5	2,738	-	17,116	8.0	5,857	xxxxxx							
Track spikes	11	46	302,350	11,676	15.4	347	-	24,136	16.0	657	xxxxxx								
All other	4	47	22,107	1,094	19.8	45	-	2,683	24.3	48	xxxxxx								
TOTAL STEEL PRODUCTS	142	48	xxxxxx	4,417,843	xxx	339,255	357,158	8,747,805	xxx	799,137	682,869								
Estimated total steel finishing capacity based on a yield from ingots of 70.6 %				-	49	48,152,500	xxxxxx	33.7	xxxxxx	xxxxxx	33.5	xxxxxx							
IRON PRODUCTS	Pig iron, ferro manganese and spiegel	29	50	xxxxxx	615,104	xxx	82,239	66,862	1,472,700	xxx	190,136	154,970							
	Ingot moulds	4	51	xxxxxx	25,779	xxx	1,664	-	51,184	xxx	3,191	xxxxxx							
	Bars	12	52	230,519	2,958	5.1	1	52	7,267	6.3	17	52							
	Pipe and tubes	4	53	185,457	5,542	12.0	111	-	12,538	13.5	325	xxxxxx							
	All other	2	54	63,560	2,172	13.7	42	668	3,889	12.2	142	1,276							
TOTAL IRON PRODUCTS (ITEMS 52 to 54)				14	55	421,576	10,672	10.1	154	720	25,694	484	1,328						

Total companies included - 165

Total steel products produced for sale, less shipments to members of the industry for conversion into further finished products: Current quarter 4,060,705 G.T.: 32.7 % of Finishing Capacity.
To date 8,064,934 G.T.: 33.5 % of Finishing Capacity.
The above tonnages represent 70.6 % of the ingots produced by companies whose products are included above.

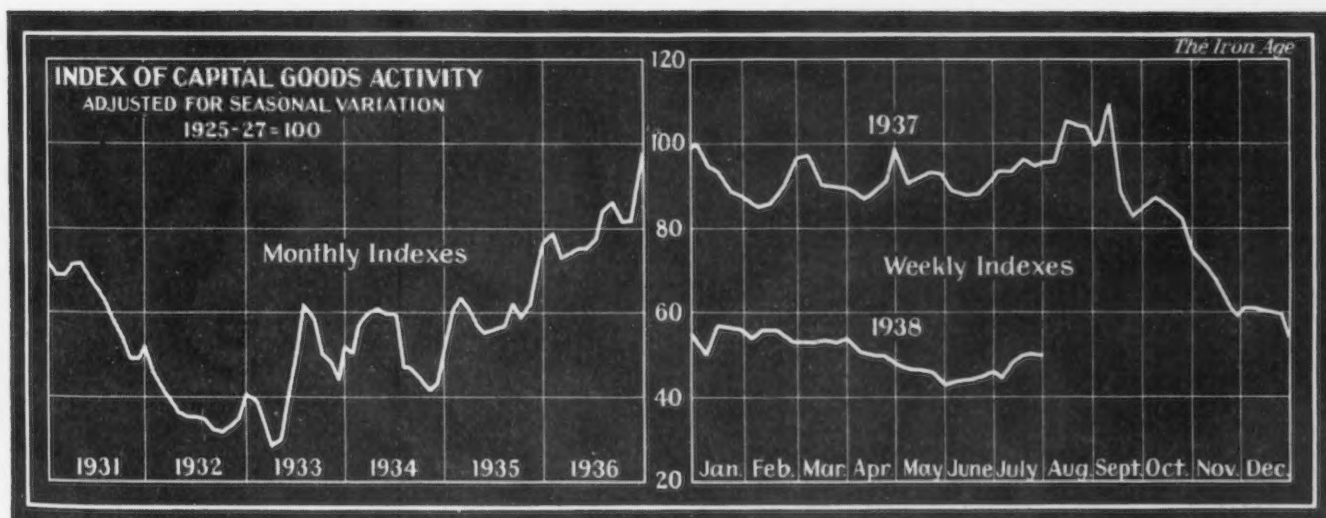
Ingot Rate Rises a Point to 41 Per Cent



District Ingot	CURRENT WEEK...	Pitts-	Chicago	Valleys	Phila-	Cleve-	Wheel-	Buffalo	Detroit	Southern	S. Ohio	Western	St. Louis	East-	Aggre-
Production, Per	PREVIOUS WEEK...	burgh			delphia	land	ing				River			ern	gate
Cent of Capacity		30.0	36.0	42.0	27.0	40.0	74.0	40.5	46.5	41.0	58.0	30.0	48.5	45.0	41.0
		30.0	34.0	41.0	27.0	36.0	70.0	40.5	46.5	43.5	54.0	30.0	35.5	50.0	40.0*

* Corrected.

Capital Goods Output Up 0.9 Point for the Week



FOLLOWING the pause in the upward movement of THE IRON AGE index of capital goods activity in the week ended Aug. 6, due to a precipitous decline in automobile assemblies, the index has resumed its 10-week advance, gaining 0.9 point to 50.2 for the week ended Aug. 13. This improvement was due to a modest increase in lumber carloadings, a continuation of the better rate of production and shipments in Pittsburgh, and an unusually large volume of construction awards. The betterment in the latter component was caused essentially by the week's high volume of private construction awards.

	Week Ended Aug. 13	Week Ended Aug. 6	Comparable Week	
			1937	1929
Steel ingot production ¹	57.1	57.0	124.1	127.1
Automobile production ²	20.8	19.4	155.8	117.4
Construction contracts ³	66.4	65.3	70.9	111.1
Forest products carloadings ⁴	52.6	51.6*	75.3	119.5
Production and shipments, Pittsburgh District ⁵	54.1	52.0	104.0	126.8
Combined index	50.2	49.1*	106.0	120.4

Sources: 1. THE IRON AGE; 2. Ward's Automotive Reports; 3. Engineering News-Record; 4. Association of American Railroads; 5. University of Pittsburgh. *Revised.

...SUMMARY OF THE WEEK...

... Steel ingot slightly higher but recovery pace slackens.

o o o

... Scrap down 50c. at Chicago and Philadelphia, 25c. at Pittsburgh.

o o o

... Structural steel leads in gains among various products.

THE recovery pace in steel operations and new business has slackened a bit, but fundamentally conditions are still encouraging for a continued upward trend of at least moderate proportions.

Steel ingot output for the current week is estimated at 41 per cent, up one point over last week. A part of the gain is attributable to the building up of stocks of raw steel, as some companies find they cannot give the quick deliveries that are demanded by customers unless they have ingots and billets on hand.

Much of the slow improvement that is taking place comes from widely scattered buying, usually in small lots. In specific items, structural steel is showing a greater gain than other products, largely through the impetus of Government-financed projects, as private undertakings are still greatly in a minority.

Although fabricated structural steel lettings in the week were relatively low at 10,500 tons, new projects out for bids make the fairly large total of 30,500 tons, including about 5000 tons for a dam in California, 4300 tons for airplane hangars at Fort Lewis, Wash., 1800 tons for a bridge in Orange County, N. Y., 1500 tons for hangars at Belleville, Ill., 1300 tons for a bridge in California, 1200 tons for a Chamber of Commerce building in Houston, Tex., 1200 tons for a Navy Department building at Durham, N. C., and 1200 tons for a bridge in Indiana. All of these projects are illustrative of pump priming activities. The largest structural steel awards were 2000 tons for an office building in Des Moines, Iowa, and 1650 tons for hangars at Rantoul, Ill. Reinforcing bar awards were 4400 tons, with 6300 tons pending in new projects.

There is keen price competition on fabricated structural steel and reinforcing bars. On the latter product concessions of several dollars a ton below published resale prices have been given.

Production of automobiles is expected to start an ascending scale, starting this week, Ford and Willys having resumed assemblies of 1938 models and other makers are to follow shortly on 1939 models. Steel orders from Detroit against recent commitments are gaining, but no further placing

of new business is expected until September, when initial runs on new models will have been nearly completed.

In the railroad field the absence of important buying draws attention to the placing of 3363 tons of rails by the Erie.

The machine tool industry reports more promising prospects for a fall rise in buying. On top of a 28 per cent increase in orders in July over June, interest in new shop equipment is developing among industrial users that have not recently been in the market. A Toronto, Ont., company is expected to buy several hundred lathes and milling machines for munitions work.

AS the time approaches for announcement of fourth quarter steel prices, which, according to precedent, may come late this month, there is no positive indication of an intention to raise quotations, nor is there any further discussion of industry-wide wage reductions. On the basis of results thus far in the third quarter, some steel companies have estimated that their breakeven point has been lifted to somewhere between 60 to 65 per cent because of price reductions and the freight rate absorptions made necessary by elimination of basing point differentials.

Meanwhile, steel scrap prices, which were rising too fast for the steel companies, have eased at Pittsburgh, Chicago and Philadelphia, being off 25c. at Pittsburgh and 50c. at the other two centers. The absence of important mill buying and a more plentiful supply of scrap account for the downward trend, which has lowered THE IRON AGE scrap composite price to \$14.41 from \$14.83, last week's average, which was attained as a result of eight consecutive weekly advances. Despite the current declines, the market undertone is strong and further rises probably would accompany a sizable gain in mill purchases.

THIS week's steel production rates show steadiness at Pittsburgh, where a 30 per cent average continues, a two point gain to 36 per cent at Chicago, a one point gain at Youngstown to 42 per cent, a four point gain in the Cleveland-Lorain area to 40 per cent, a four point rise in Southern Ohio to 58 per cent, while the Wheeling-Weirton district, up four points to 74 per cent, continues to lead the industry.

As American steel making gains slowly, the recession in Great Britain is causing anxiety there and a realization that armament business alone is not sufficient for maintenance of the present rate.

The Maritime Commission has awarded four ships for the American Exports Lines to Bethlehem Shipbuilding Corp.; they will take 16,760 tons of steel. The Navy is taking bids on a sea-plane tender and a destroyer tender requiring 10,000 to 12,000 tons of steel.

A Comparison of Prices

Market Prices at Date, and One Week, One Month, and One Year Previous
Advances Over Past Week in Heavy Type, Declines in Italics

Rails and Semi-finished Steel

Per Gross Ton:	Aug. 16, 1938	Aug. 9, 1938	July 19, 1938	*Aug. 17, 1937
Rails, heavy, at mill.....	\$42.50	\$42.50	\$42.50	\$42.50
Light rails, Pittsburgh, Chicago and Birmingham....	40.00	40.00	43.00	43.00
Rerolling billets, Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham, Sparrows Point.	34.00	34.00	34.00	37.00
Sheet bars, Pittsburgh, Chicago, Cleveland, Youngstown, Buffalo, Canton, Sparrows Point.....	34.00	34.00	34.00	37.00
Slabs, Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham, Sparrows Point.....	34.00	34.00	34.00	37.00
Forging billets, Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham.....	40.00	40.00	40.00	43.00
Wire rods, Nos. 4 and 5, Pittsburgh, Chicago, Cleveland.....	43.00	43.00	43.00	47.00
	Cents	Cents	Cents	Cents
Skelp, grvd. steel, Pittsburgh, Chicago, Youngstown, Coatesville, Sparrows Point.....	1.90	1.90	1.90	2.10

*Pittsburgh prices only.

Finished Steel

Per Lb.:	Cents	Cents	Cents	*Cents
Bars, Pittsburgh, Chicago, Gary, Cleveland, Buffalo, Birmingham.....	2.25	2.25	2.25	2.45
Plates, Pittsburgh, Chicago, Gary, Birmingham, Sparrows Point, Cleveland, Youngstown, Coatesville, Claymont.....	2.10	2.10	2.10	2.25
Structural shapes, Pittsburgh, Chicago, Gary, Buffalo, Bethlehem, Birmingham.....	2.10	2.10	2.10	2.25
Cold finished bars, Pittsburgh, Buffalo, Cleveland, Chicago, Gary.....	2.70	2.70	2.70	2.90
Hot rolled strip, Pittsburgh, Chicago, Gary, Cleveland, Middletown, Youngstown, Birmingham.....	2.15	2.15	2.15	2.40
Cold rolled strip, Pittsburgh, Cleveland, Youngstown.....	2.95	2.95	2.95	3.20
Sheets, galv., No. 24, Pittsburgh, Gary, Sparrows Point, Buffalo, Middletown, Youngstown, Birmingham.....	3.50	3.50	3.50	3.80
Hot-rolled sheets, Pittsburgh, Gary, Birmingham, Buffalo, Sparrows Point, Cleveland, Youngstown, Middletown.....	2.15	2.15	2.15	...
Cold-rolled sheets, Pittsburgh, Gary, Buffalo, Youngstown, Cleveland, Middletown.....	3.20	3.20	3.20	...

On export business there are frequent variations from the above prices. Also in domestic business, there is at times a range of prices on various products, as shown in our detailed price tables.

Wire nails, Pittsburgh, Chicago, Cleveland, Birmingham.....	2.45	2.45	2.45	2.75
Plain wire, Pittsburgh, Chicago, Cleveland, Birmingham.....	2.60	2.60	2.60	2.90
Barbed wire, galv., Pittsburgh, Chicago, Cleveland, Birmingham.....	3.20	3.20	3.20	3.45
Tin plate, 100 lb. base box, Pittsburgh and Gary.....	\$5.35	\$5.35	\$5.35	\$5.35

*Pittsburgh prices only.

Pig Iron

Per Gross Ton:	Aug. 16, 1938	Aug. 9, 1938	July 19, 1938	†Aug. 17, 1937
No. 2 fdy., Philadelphia.....	\$21.84	\$21.84	\$21.84	\$25.16
No. 2, Valley furnace.....	20.00	20.00	20.00	24.00
No. 2, Southern Clin'tl.....	20.06	20.06	20.06	23.69
No. 2, Birmingham.....	16.38	16.38	16.38	20.38
No. 2 foundry, Chicago*.....	20.00	20.00	20.00	24.00
Basic, del'd eastern Pa.....	21.34	21.34	21.34	25.26
Basic, Valley furnace.....	19.50	19.50	19.50	23.50
Malleable, Chicago*.....	20.00	20.00	20.00	24.00
Malleable, Valley.....	20.00	20.00	20.00	24.00
L. S. charcoal, Chicago.....	28.34	28.34	28.34	30.04
Ferromanganese, Seab'd carlots.....	92.50	92.50	92.50	102.90

†The switching charge for delivery to foundries in the Chicago district is 60c. per ton.

Scrap

Per Gross Ton:	\$15.25	\$15.50	\$14.25	\$22.00
Heavy melting steel, P'gh.....	14.25	14.75	13.75	19.75
Heavy melting steel, Ch'go.....	13.75	14.25	12.25	19.75
Heavy melting steel, Ch'go.....	14.25	15.25	13.75	19.75
Carwheels, Chicago.....	17.25	17.25	15.75	20.75
Carwheels, Philadelphia.....	15.25	15.25	14.75	20.25
No. 1 cast, Pittsburgh.....	16.25	16.75	15.75	21.25
No. 1 cast, Philadelphia.....	13.25	13.75	12.25	16.75
No. 1 cast, Ch'go (net ton).....	15.25	15.25	15.25	19.75
No. 1 RR. wrot., Phila.....				

Coke, Connellsville

Per Net Ton at Oven:	\$3.75	\$3.75	\$3.75	\$4.35
Furnace coke, prompt.....	4.75	4.75	4.75	5.00
Foundry coke, prompt.....				

Non-Ferrous Metals

Per Lb. to Large Buyers	Cents	Cents	Cents	Cents
Electrolytic copper, Conn.....	10.125	10.125	9.75	14.00
Lake copper, New York.....	10.25	10.25	9.875	14.12½
Tin (Stralts), New York.....	42.875	43.25	43.35	59.75
Zinc, East St. Louis.....	4.75	4.75	4.75	7.25
Zinc, New York.....	5.14	5.14	5.14	7.60
Lead, St. Louis.....	4.75	4.75	4.75	6.35
Lead, New York.....	4.90	4.90	4.90	6.50
Antimony (Asiatic), N. Y.....	14.00	14.00	14.00	15.25

The Iron Age Composite Prices

Finished Steel

August 16, 1938
One week ago
One month ago
One year ago

2.300c. a Lb.	2.300c.	2.300c.	2.512c.
Based on steel bars, beams, tank plates, wire, rails, black pipe, sheets and hot-rolled strip. These products represent 85 per cent of the United States output.			

High	Low	High	Low
1938.....	2.512c., May 17	2.300c., July 6	6
1937.....	2.512c., Mar. 9	2.249c., Jan. 4	4
1936.....	2.249c., Dec. 28	2.016c., Mar. 10	10
1935.....	2.062c., Oct. 1	2.056c., Jan. 8	8
1934.....	2.118c., Apr. 24	1.945c., Jan. 2	2
1933.....	1.953c., Oct. 3	1.792c., May 2	2
1932.....	1.915c., Sept. 6	1.870c., Mar. 15	15
1931.....	1.981c., Jan. 13	1.883c., Dec. 29	29
1930.....	2.192c., Jan. 7	1.962c., Dec. 9	9
1929.....	2.223c., Apr. 2	2.192c., Oct. 29	29
1928.....	2.192c., Dec. 11	2.142c., July 10	10
1927.....	2.402c., Jan. 4	2.212c., Nov. 1	1

Pig Iron

\$19.61 a Gross Ton
19.61
19.61
23.25

Based on average basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Southern iron at Cincinnati.

High	Low	High	Low
23.25, June 21	\$19.61, July 6	21	6
23.25, Mar. 9	20.25, Feb. 16	16	16
19.73, Nov. 24	18.73, Aug. 11	11	11
18.84, Nov. 5	17.83, May 14	14	14
17.90, May 1	16.90, Jan. 27	27	27
16.90, Dec. 5	13.56, Jan. 3	3	3
14.81, Jan. 5	13.56, Dec. 6	6	6
15.90, Jan. 6	14.79, Dec. 15	15	15
18.21, Jan. 7	15.90, Dec. 16	16	16
18.71, May 14	18.21, Dec. 17	17	17
18.59, Nov. 27	17.04, July 24	24	24
19.71, Jan. 4	17.54, Nov. 1	1	1

Steel Scrap

\$14.41 a Gross Ton
14.33
13.08
20.50

Based on No. 1 heavy melting steel quotations at Pittsburgh, Philadelphia and Chicago.

High	Low	High	Low
\$14.83, Aug. 9	\$11.00, June 7	7	7
21.92, Mar. 30	12.92, Nov. 16	16	16
17.75, Dec. 21	12.67, June 9	9	9
13.42, Dec. 10	10.33, Apr. 23	23	23
13.00, Mar. 13	9.50, Sept. 25	25	25
12.25, Aug. 8	6.75, Jan. 3	3	3
8.50, Jan. 12	6.43, July 5	5	5
11.33, Jan. 6	8.50, Dec. 29	29	29
15.00, Feb. 18	11.25, Dec. 9	9	9
17.58, Jan. 29	14.08, Dec. 3	3	3
16.50, Dec. 31	13.08, July 2	2	2
15.25, Jan. 17	13.08, Nov. 22	22	22

...PITTSBURGH...

... Pace of recovery in buying is somewhat slower ...
Steel scrap off 25c. a ton ... Operations higher in
Wheeling-Weirton district.

PITTSBURGH, Aug. 16.—New business in the past week was a trifle below that booked in the previous week with no evidence that the slow, halting upward trend in orders has been arrested. Meanwhile, bookings so far this month continue to run considerably ahead of the same number of days in July. Products most in demand are structural shapes, semi-finished steel and wire. Although flat rolled specifications have leveled off slightly, owing to absence of automotive buying, the presence of a widely diversified demand from miscellaneous sources is further proof that consumers' stocks are exceptionally low if not non-existent. Current business for the most part is for prompt shipment and consumption.

Fourth quarter price announcements are expected in a few weeks if the established practice is followed. Chances for a realized price advance are remote and consumers seem to be little concerned about forthcoming announcements. Even though a small increase in steel prices was posted most consumers would be able to cover if the advance were enough to justify the expense of laying in future needs.

Steel operations in the Pittsburgh district remain unchanged at 30 per cent of capacity while the Wheeling-Weirton district is up four points to 74 per cent. Part of the latter operating rate is for mill inventories in anticipation of future needs.

No. 1 heavy melting is easier by 25c. a ton, being quoted at \$15 to \$15.50 a ton.

Pig Iron

New business is on a par with the corresponding period a month ago. Major support in this area is emanat-

ing from sanitary and radiator manufacturers.

Semi-Finished Steel

Demand is holding up well with orders as numerous as a month ago. As stocks at consumer's plants are exceptionally low, improvement in general business conditions will be rapidly reflected in increased mill specifications. Wire rods are fairly active.

Bars, Plates and Shapes

Supported for the most part by a wide variety of miscellaneous demands, hot rolled bar bookings continue to reflect substantial increases from the same period last month. As most consumers have whittled down inventories until only odd sizes remain, current orders are for immediate shipment and consumption. Led by Government-financed projects, structural inquiries continue to expand, while awards were not quite as numerous as a week ago.

Reinforcing Bars

Publicly financed construction jobs figure heavily in recent concrete bar business and the outlook for further improved demand is bright. Reinforcing bar prices are far from stabilized, and cuts of \$3 to \$4 a ton from published quotations are general. Large projects have been shaded somewhat more than these figures.

Wire

Aggregate wire business improved somewhat in the past week and orders so far this month are considerably ahead of those in the same period in July. Increases are about evenly divided among manufacturers' wire, merchant products, and wire rods.

Sheets and Strip

Total sheet business in the past week receded slightly owing to absence of automotive tonnages. Miscellaneous demand persists, however, and indicates a fairly active sheet market until automotive orders begin to expand. Galvanized sheet demand is exceptionally strong and some mills have fair backlogs.

Tin Plate

Operations have leveled off slightly and are estimated this week at 30 to 35 per cent. Current business is for urgent needs only as consumers are holding back as much as possible until new prices are announced later this year. Trial merchandising of canned grape juice is reported to have been highly successful.

Tubular Goods

Oil-country goods specifications have expanded somewhat in the past few weeks. This condition is considered promising as consumers are still ordering only absolute necessities. Standard pipe demand has improved slightly owing to increased building activity.

Shipyard Committee Told By NLRB to Disband

WASHINGTON.—The National Labor Relations Board last week ordered the Newport News (Va.) Shipbuilding & Dry Dock Co., to disband its Employees Representative Committee, alleging that it is a company-dominated labor organization. The board also issued an order charging that the Precision Castings Co., Inc., Fayetteville, N. Y., discouraged membership in the AFL's molders union and allegedly discharging six employees in 1935 for union activities.

The NLRB ordered the Singer Sewing Machine Co., Chicago, to bargain collectively with Singer Sewing Machine Mechanics Association as the exclusive representative of adjusters and power-table men.

Weekly Booking of Construction Steel

	Week-Ended			Year to Date	
	Aug. 16, 1938	Aug. 9, 1938	July 19, 1938	1938	1937
Fabricated structural steel awards.....	10,500	17,350	7,800	12,450	437,120
Fabricated plate awards	5,120	4,485	3,485	2,270	89,420
Steel sheet piling awards	275	0	790	525	30,260
Reinforcing bar awards	4,415	11,830*	19,800	11,050	177,610
Total Letting of Construction Steel	20,310	33,665*	31,875	26,295	734,410
* Revised.					1,060,700

... CHICAGO ...

... Ingot operations gain two points to 36% ... Steel scrap declines 50c. ... Pig iron shipments gain over July ... Sheet & Tube to expand Chicago properties.

CHICAGO, Aug. 16.—Improvement in sales being small, it is believed that inter-company demand is largely responsible for the increased operations at local mills, a two point gain to 36 per cent of capacity having been attained this week. Pig iron producing activity is unchanged, 11 furnaces remaining in blast.

Neither the character nor the volume of orders being received has changed greatly in the past few weeks. A well diversified general demand, amounting in one case to as much as 45 per cent of total tonnage, is the outstanding feature of the current market situation. Indicative of the lack of real activity in usually important lines is the fact that purchases from automobile and farm equipment manufacturers, railroads, and fabricators combined is amounting only to slightly more than half of the entire business.

Orders from Detroit are increasing gradually and sentiment in that direction is fast improving. Local sellers still do not expect to benefit greatly, however, for several weeks.

One seller reports that because of current specifying on orders previously placed, structural shapes are maintaining their position as well as any item.

Reinforcing bar prices are still spotty, but quotations on most other finished products are said to be firm.

Of outstanding importance here is the announcement by Youngstown Sheet & Tube Co. that \$16,500,000 will soon be spent in adding to producing and finishing facilities. A 48-in. continuous hot sheet and strip mill and a continuous tin mill are the chief finishing additions planned. The new 44-in. strip mill of the Inland Steel Co. is expected to go into operation shortly.

Scrap prices are down this week, heavy melting being listed at \$13.50 to \$14.

Pig Iron

Shipments of pig iron are well ahead of last month, in one case re-

leases now on hand totaling more than all of July's orders. Foundry coke orders are continuing to increase, the current week bettering last. A sharp improvement is expected following Labor Day as many foundries still are on vacation schedules.

Warehouse Business

August thus far is just slightly ahead of July, but no upturn of importance is anticipated until after Labor Day. The action of the market is entirely normal for this time of year, though volume of business is below average. Orders are for a wide range of material.

Structural Shapes and Reinforcing Steel

Demand for structural shapes is being maintained rather well and several large projects, notably hangars at Fort Lewis, Wash., and Scott Field, Ill., are out for early closing. Large reinforcing bar jobs are not common, but sentiment is good because of the number of small contracts and inquiries averaging 50 tons.

Sheets and Strip

With automobile releases not yet prominent, miscellaneous buying continues an important factor in flat rolled production. Some encouragement is being seen in Detroit, but orders are not in good volume. One parts maker has ordered a tonnage of long ternes for air cleaners. Some farm equipment ordering continues, mostly from tractor builders.

Plates

No more railroad tonnage for some time is the present outlook. Tank builders and structural fabricators are moderately occupied.

Bars

Farm implement and tractor interest growing less and less, and auto specifying being at low ebb, bar sellers are chiefly dependent on general

consumption, which at the moment is fairly active. Jobber needs are contributing importantly to current bar demand.

Wire and Wire Products

Little change has been seen for the past several weeks in the trend of wire orders. Rural purchases have been declining gradually in accordance with the season while manufacturing wire demand has benefited mostly from miscellaneous buying since much of its volume depends upon activity in the automobile industry.

... SAN FRANCISCO ...

... Price discrepancies appear in Pacific Coast steel bids.

SAN FRANCISCO, Aug. 15.—Increasing price confusion, with a tendency toward irregularity and wide discrepancy in bids is evident in the Western market. On Government work the land grant and Federal bills of lading and freight differential's occasion handicaps on material for delivery at large public works projects at remote interior points. The recent change in basing points and new basis of steel product quotations add further complications to bidding on public projects. Widespread uncertainty and a weakened market on major tonnages have resulted.

Approximately 3000 tons of plates and miscellaneous chain and anchor materials are involved in the \$450,000 fleet moorings project at the San Diego Naval Station for which bids were opened last week. Southwest Welding & Mfg. Co. of Alhambra is low on the general contract.

For the Terminal Annex Parcel Post Building at Los Angeles, Sarver & Zoss, Inc., is low on the general contract. This structure was originally estimated to require from 2000 to 5000 tons of structural steel but has now been changed to a reinforced concrete building so that the major tonnage will be bars. No award has been announced.

United States Engineer Office, Los Angeles, calls bids Sept. 15 on 5487 tons structural and reinforcing steel and 271 tons miscellaneous metal for Prado dam on Santa Ana River (Invitation 90).

..BIRMINGHAM..

... Outlook improving in the South ... Ore mines resume operations.

BIRMINGHAM, Aug. 16.—With 11 open hearths and nine blast furnaces in operation, the local iron and steel industry seems to be pointing upward to an active fall season. Further gains in operations are expected. A fair run of miscellaneous steel orders continues. These are scattered principally among sheets, bars, wire products and cotton ties.

The buying wave in pig iron has subsided somewhat but shipments are holding to the recent improvement and the furnaces now have heavy backlogs. Foundry melt is still limited, though slightly improved. Foundries seem to be taking some of the iron for moderate stocking. For a long time they took iron only as immediately needed.

Last week Tennessee Coal, Iron & Railroad Co. operated five open

hearth at Fairfield and two at Ensley; Republic Steel, four at Gadsden. The same schedules are announced for this week.

Blast furnaces in operation total nine. Tennessee company has four, two at Ensley and two at Fairfield. Fairfield No. 6 was blown in July 31 and Ensley No. 3 on Aug. 3. Woodward Iron has two, Sloss-Sheffield one and Republic Steel two, one at Birmingham and the other at Gadsden. It is reported that Republic will blow in its other Birmingham stack at an early date.

The Tennessee company reopened four ore mines on Tuesday, Aug. 16. Between 1500 and 2000 men returned to work. The mines reopened are Muscoda No. 4, Muscoda No. 6, Wenonah No. 7 and Iskooda No. 13. They had been closed since June 25. Night shifts were added last week by Republic Steel at its Raimund ore mine and Sayreton coal mine.

Work has been resumed at the Bessemer plant of the Pullman-Standard Car Mfg. Co. on the Southern Railway car order. At the present time material is being fabricated and the

assembly of the cars has not yet started. The Bessemer plant received 23 additional cars from the extra order placed by the Southern Railway.

Bessemer plant of the U. S. Pipe & Foundry Co. has received an order of approximately 5000 tons of pipe from the city of Chicago.

The scrap market is better and there has been a decided improvement in both bookings and shipments.

CANADA

... Markets seasonally dull, but fall prospects are considered good.

TORONTO, Aug. 16.—Business continues seasonally quiet in the Canadian iron and steel markets with demand confined to spot needs of consumers. No large awards have been reported from domestic sources, although export demand continues good and some large contracts have been closed which largely are responsible for the continued high operating schedules of the steel mills, between 80 and 90 per cent.

Canadian steel interests are looking forward to additional large orders later in the year both on export account and for domestic use. The railroads are expected to place new orders for rails and rolling stock and the agricultural implement companies are preparing for big demand for implements in Western Canada. The automotive industry is marking time but soon will get underway on fall models. Warehouse operators report steady demand for sheets and bars and the mills are making good deliveries of these materials. Prices are fairly steady with only minor changes reported in a few odd lines.

Merchant pig iron sales are holding around 1500 tons weekly, with current demand for spot delivery. The melt is averaging about 60 per cent. Production of pig iron is down from its high peak for the year of 67 per cent, to approximately 47 per cent, with four stacks blowing. Prices continue steady.

The mills are taking heavy melting steel as offered by dealers and demand exceeds supply. Local dealers are still holding scrap for delivery to the United States when market conditions improve across the line.



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... CLEVELAND ...

... Orders show a gain and ingot output continues to improve ... Breakeven point for some mills estimated at 60 to 65% ... Erie buys 3363 tons of rails.

CLEVELAND, Aug. 16.—Orders for August are showing a heartening gain over the comparable period of July, and ingot output continues to improve in both districts, the rate for Youngstown and nearby cities being up one point to 42 per cent this week, while the Cleveland-Lorain average has risen four points to 40 per cent. Additional open hearths are ready to resume upon short notice.

From practically all sources, demand is better, and it is significant that virtually all the material being shipped is for immediate use. Order books include a sprinkling of automobile releases, railroad purchases, specifications for pipe and casing, and requirements of the construction industry, in addition to moderate amounts placed by miscellaneous consumers whose inventories are depleted.

Erie Railroad has placed 2127 tons of 112-lb. rails and 1236 tons of 131-lb. rails with Carnegie-Illinois Steel Corp. and Bethlehem Steel Co. and has allocated the necessary fastenings. The 15,000 tons of line pipe placed by Continental Oil Co. will benefit Ohio tubular mills, which have noted also an upturn in casing orders recently.

Some fair-sized inquiries have been current for steel and iron for export, mostly to Japan.

Estimates made by a number of mills recently for their own information show the breakeven point is now between 60 and 65 per cent operations.

Pig Iron

Shipments are running about 10 per cent ahead of the comparable July period. Some automotive foundries made releases last week and resump-tions by others are expected soon. With this activity and with small jobbing foundries becoming busier, the upturn in deliveries is expected to continue even though individual tonnages are not large. The improved tone has been reflected in foundry coke. While there has been talk of possible restoration of \$1 a ton for producers in

view of the profitless condition existing, no one yet has taken the initiative toward raising the price.

Bars, Plates and Shapes

New business in hot rolled and alloy bars show steady improvement. A 350-ton bridge for the Chesapeake & Ohio at Brighton, Ohio, has been awarded to American Bridge Co., while Ingalls Iron Works Co. has received 200 tons for the Veterans' buildings at Dayton, Ohio, and Fort Pitt Bridge Works 493 tons for a factory building in Detroit.

Sheets and Strip

Incoming business continues to improve. Most automobile producers have made their initial buys and are expected to make additional purchases soon. Meanwhile, miscellaneous demand continues good.

Wire and Wire Products

The improvement in bookings which started a few weeks ago is being maintained, mostly due to the demand from the manufacturing trade and requirements for rods. While merchant products are seasonally inactive, some uplift usually is felt in the latter part of August or the early part of September and producers are looking forward to these potential gains.

Bolts, Nuts and Rivets

An Eastern cap screw manufacturer announced new higher prices last week. At this writing manufacturers here have not followed suit, but are understood to be giving serious consideration to the matter. The increase is reported to be around 15 per cent. Demand continues fair in all lines, with a sprinkling of automotive business. Shipments to the auto industry are expected to become heavier next month.

Tubular Goods

Casing sales in the oil country showed a fair increase last week after a long period of inactivity. At the

same time a number of orders for pipe for feeder lines came through, providing further encouragement for producers.

Warehouse Business

Sales in this vicinity are showing more diversity. Principal demand during recent weeks has been miscellaneous repair work during vacation shutdowns.

....BUFFALO....

... Ingot-making schedules continue unchanged.

BUFFALO, Aug. 16.—No pronounced change in the general steel market is evident here. Demand is dispersed over all lines and is slightly better, but is not termed steady. The structural steel and bar markets are supported principally by moderate state and federal orders. These have gained somewhat, but as yet there has not been a great deal in the way of private construction.

Ingot production remains constant this week at all three of the principal mills. Bethlehem's Lackawanna plant is maintaining 12 open hearths while Republic Steel Corp. has four, and Wickwire-Spencer, two, active.

Warehouse Sales Run At 56.9% of 1937 Level

CLEVELAND.—Sales of steel warehouse distributors during the first six months of 1938 were 56.9 per cent of the volume during the comparable period of 1937, according to a report of the American Steel Warehouse Association.

The report points out that the decrease in warehouse orders has not been so great as the decline in steel ingot output, which averaged 37.7 per cent in the first half of this year.

Walter Doxsey, secretary of the association, said warehouse business in the automotive industrial district which includes Detroit, northern Ohio and Pittsburgh, had felt the present recession to a greater degree than other markets. Business in this area during the first six months was approximately 55 per cent below the 1937 level. The average for the United States was 43.1 per cent.

....ST. LOUIS....

... General contract let for bridge taking 14,085 tons of shapes.

ST. LOUIS, Aug. 16.—Subject to approval of the PWA, the St. Clair County Board of Supervisors has awarded the contract for the construction of the proposed Mississippi River bridge to extend from St. Clair Avenue, East St. Louis, Ill., to Broadway, St. Louis, to G. L. Tarlton Construction Co., St. Louis, whose low bid was \$5,383,109. The bridge will be 8063 ft. long, and will require 14,085 tons of structural shapes, including 4590 tons of silicon steel, and 1215 tons of reinforcing bars.

The War Department has ordered

immediate construction of the St. Francis River project, including the Wappapello Dam, requiring 1000 tons of reinforcing bars, and the general contract has been awarded to Hallett Construction Co., Crosby, Minn.

The Illinois Highway Commission received low bids direct on highway bridges, requiring structural shapes, as follows: 222 tons, Fort Pitt Bridge Works, Pittsburgh; 250 tons, Stupp Brothers Bridge & Iron Co., St. Louis, and 182 tons, St. Louis Structural Steel Co., East St. Louis, Ill.

The Midwest Construction Co., Chicago, is low bidder on a powder magazine at Savannah, Ill., requiring 500 tons of reinforcing bars.

Inquiries for galvanized sheets are beginning to come in from jobbers, and prices are firm.

Buying of pig iron continues light, which is as expected, in view of the heavy buying which followed the price reduction of \$4 a ton. Ingot production in the St. Louis area is higher now than it has been in some time, being 48 per cent of capacity.

...CINCINNATI...

... Ingot output up in Southern Ohio ... Sheet demand steady.

CINCINNATI, Aug. 16.—Although active ordering of pig iron has leveled off, more frequent inquiry gives the market a brighter outlook. Ordering has increased to small lots for current use since the bulk of melters covered following price concessions. Shipments are on about an even keel with the preceding quarter, indicating no greater need for materials despite the early quarter coverage. Foundry operations are holding to about 30 per cent, with machine tool melters still a trifle above the market average.

No change in finished sheet steel demand is noted. Current tonnage has leveled off at last week's average of about 45 per cent. Business is well diversified and reflects steady consumption. The market is sensitive toward general business improvement since inventories of users are still low. Imminence of automobile purchasing for new models continues to buoy market sentiment with the background of regular buying from other sources.

Steel making, ingot production, is up a few points this week to about 57 per cent. Producers, having reduced ingot stocks, are replenishing material in anticipation of fall improvement.

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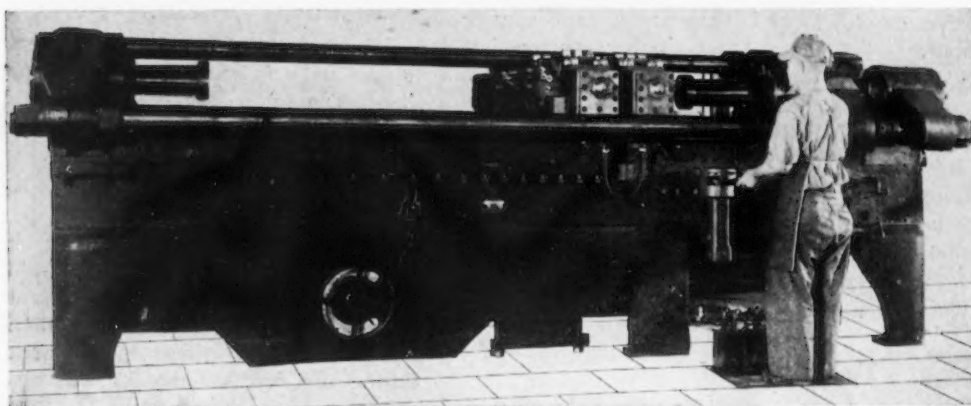
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Welding machines hand, hydraulic, cam or air operated of the following types: spot, seam, projection, flash, butt, flue and pipe, also gun welding units.

.. PHILADELPHIA ..

... Curtailed consumer activity reflected in reduced sales volume ... More plentiful supplies and lack of mill buying weakens scrap prices ... Ingot operations unchanged at 27%.

PHILADELPHIA, Aug. 16.—The extremely hot weather of recent weeks, which in many cases has forced curtailment of production schedules in steel consuming plants, together with the absence of numerous executives on vacations, has brought about a lull in buying activities in the past week. The week's volume, while not below the July average week, was less than that of the preceding week. In only one sales office in this district were the week's sales reported to be in excess of the preceding week.

This reaction has found reflection in the scrap market where the lack of mill buying and more plentiful supplies has cut short the upward movement of scrap prices, with No. 1 melting steel being quotable this week at \$14 to \$14.50, down 50c. from the previous week.

The reduced sales volume has precluded the possibility of a rise in the ingot production rate, which continues at 27 per cent of capacity.

Pig Iron

Melting activities were somewhat lighter in the past week owing to the hot weather, but foundry operators look at the future in an optimistic light. New orders are very light, but shipments are holding to the levels of the past several weeks. Rumors of a possible price increase this fall have had no visible effect on the buying policy of consumers here. Hard upon the heels of the recent Japanese purchase of 10,000 tons from an Eastern producer, Chinese sources are inquiring for several thousand tons of basic and foundry grades.

Warehouse Business

Sales from warehouses are showing the same trend as producers' sales, but the leveling off has not been quite so sharp. Prices, since the recent \$5 reduction, are holding firm, and buying is well diversified.

Plates and Shapes

Although there is substantial business in the offing, especially from ship-

building interests, plate sales last week were particularly light. Tank fabricators are experiencing a dull season, the railroads are still out of the market, and only meager tonnages have been forthcoming from the independent shipyards thus far. Export interest is also at a low level, due primarily to the fact that most producers outside the cartel feel that the 1.75c. price expected by export buyers on the basis of a recent sale is much too low. Bids are being taken on two more boats for the Navy Department, a sea-plane tender and a destroyer tender, which will require between 10,000 and 12,000 tons of shapes. Structural awards in the past week were more numerous than in the past several weeks, and the volume of new work

.. CAST IRON PIPE ..

Asheboro, N. C., plans pipe line extensions and replacements in water system. A bond issue of \$90,000 has been authorized for this and other waterworks installation. William M. Piatt, Depositors' National Bank Building, Durham, N. C., is consulting engineer.

General Purchasing Officer, Panama Canal, Washington, closes bids Aug. 29 for cast iron water pipe and fittings (Schedule 3375).

Barstow, Tex., will take bids soon for pipe for water system and other waterworks equipment, including elevated steel tank and tower, pumping station, etc. Fund of \$56,000 has been secured through Federal aid. Koch & Fowler, Great National Life Building, Dallas, Tex., are consulting engineers.

Council Grove, Kan., plans pipe lines for water system, including main line from Canning Creek, source of supply, where earth and rock dam will be built. Cost about \$200,000. Financing has been arranged through Federal aid. S. A. Sulentic, New England Building, Topeka, Kan., is consulting engineer.

Melbourne, Iowa, plans pipe lines for water system and other waterworks installation. Fund of \$32,000 is being arranged, partly through Federal aid. H. R. Green, 417 First Avenue, Cedar Rapids, Iowa, is consulting engineer.

Hoopeston, Ill., plans pipe line extensions and improvements in water system and other waterworks installation. Cost about \$72,700. Financing has been arranged through Federal aid. Warren & Van Praag, Inc., Millikin Building, Decatur, Ill., is consulting engineer.

Kemmerer, Wyo., plans pipe lines for water system, including main line from source of supply at Kelly Springs to city, about 38 miles. Fund of \$545,000 is being arranged through Federal grant and municipal bond issue.

coming out also showed an upward trend. There is still, however, a dearth of private projects.

Reinforcing Bars

In contrast to the apparent firmness in quotations on other steel products, concrete reinforcing bar prices are showing the result of severe competition among distributors. In this district, the average range of prices on fair sized lots is between 1.85c. and 1.90c., while in New York concessions are slightly greater. Some recent tonnages in New York have gone at 2.03c., delivered by truck. Influenced largely by publicly financed highway work, awards in the past week were slightly greater than for some time past.

Sheets

With one of the major outlets shut down by a strike and jobbing stampers less active, sheet sales so far this month are running a little below the level of the similar period in July. As yet there has been no large scale buying by automobile parts makers. Published prices are prevailing on all current business.

Bremerton, Wash., is considering extensions in water pipe lines, including new 24-in. main supply line. Cost about \$125,000. Application will be made for Federal loan and grant. Plans also are under consideration for new reservoirs in East and West Bremerton to cost about \$90,000. C. C. Casad is city engineer.

Esbridge, Kan., plans pipe lines for water system and other waterworks installation, including main line from source of supply, about five miles, elevated steel tank and tower, and purification plant. Cost about \$107,800. Financing is being arranged through Federal aid. Paulette & Wilson, Farmers' Union Building, Salina, Kan., and 1006 Kansas Avenue, Topeka, Kan., are consulting engineers.

Florissant, Mo., plans pipe lines for water system and other waterworks installation, including main line for connection with system of St. Louis County Water Co., which will furnish supply. Special election has been called Aug. 7 to vote \$52,000 bonds for project.

Boynton, Okla., plans pipe line extensions and replacements in water system. Cost about \$30,000. Financing is being arranged. H. T. Lawrence, 2830 West Eighteenth Street, Oklahoma City, is consulting engineer.

San Diego, Cal., has awarded 231 tons of 18-in. to American Cast Iron Pipe Co., through Fred W. Weber, general contractor, for replacement near Del Mar.

Tacoma, Wash., will open bids Aug. 22 on approximately 2000 tons of 4 to 20-in. pipe, including 50 tons of fittings.

Tacoma, Wash., is engaged in a \$1,566,000 waterworks improvement program with a \$704,700 Federal grant to cover construction of 3810 ft. of 42-in., 3490 ft. of 24-in. steel pipe, installation of 75,500 ft. of cast iron ranging from 12-in. to 24-in., 5½ miles of 38-in. steel or concrete gravity line and construction of a booster pumping plant.

Centerville, Mass., closed bids Aug. 15 on 25,000 tons of pipe. D. Marco & Ciccone, New York, are low bidders at \$317,290. High bid was \$394,162.

...NEW YORK...

... Flow of new business flattens out slightly ... Nearly all orders for quick shipment ... Weakness in reinforcing bar prices continues.

NEW YORK, Aug. 16.—While there seems to be a flattening out in the flow of new steel business, a good deal of prospective buying is in the development stage. For example, there has been a spurt in inquiry for oil refinery equipment, but it may be some weeks before the steel orders get to the mills.

Nearly all orders are for immediate shipment, and in many instances the mill that is able to promise the quickest delivery takes the order. Mills are trying to keep a little bit ahead on stocks of ingots and billets so that rollings can be expedited.

Prices appear to be firm except on reinforcing bars. The published resale price of 2.05c., mill, seems to apply on only the very smallest lots. On the larger projects, concessions of \$3 or \$4 a ton, or even more, are readily obtainable.

Plates and Sheets

The flow of small plate orders is drying up, and district sellers are discouraged as to the immediate future. The only big job in sight, the city scow contract, is indefinitely postponed, and the best guess is that the bids will probably be readvertised. Two large tank contracts were awarded in the East during the past week. Pittsburgh-Des Moines Steel Co. was the successful bidder on a 1,500,000-gal. tank, involving 955 tons of plates, for the City of Batavia,

N. Y., and Chicago Bridge & Iron Works was awarded three tanks, involving 140 tons, by Gulf Refining Co. at Sandwich, Mass. No definite information is available on the proposed repair program of the New York Central.

Sheet volume is down somewhat also. There has been some refrigerator business placed during the past week, and stove makers continue to be active buyers of enameling sheets. New England jobbers are replenishing supplies of galvanized at a better rate.

Pig Iron

Shipments are not going ahead as fast as they were a month ago, although it is the consensus of opinion among the sellers that the foundry melt is still on the increase. This is particularly true of the larger manufacturers of machinery, whereas many of the smaller jobbing foundries are getting less business than they were. Heater plants are seasonally active. New orders are light and involve only carlots. A price advance is still talked of, but predictions are made that no announcement will be forthcoming until fourth-quarter steel prices are known.

Confirmation of large inquiries from Chinese sources are lacking.

Chateaugay Ore and Iron Co., heretofore a producer of low-phos. pig iron only, is to manufacture bessemer,

malleable, foundry and basic grades at its Standish, N. Y., furnace, which has an annual capacity of over 100,000 tons.

RAILROAD BUYING

Chicago Great Western has leased, with option to buy, 50 light-weight box cars from Pullman-Standard Car Mfg. Co.

Chicago, Rock Island & Pacific has leased, with option to buy, 16 diesel-electric locomotives from Electro-Motive Corp.

New York, New Haven & Hartford has been authorized to issue \$1,640,000 of trustee equipment trust certificates in connection with purchase of certain new equipment.

Boston Elevated Railway has placed 28 trolley coaches with the Pullman-Standard Car Mfg. Co., 18 of which will be electrically equipped by General Electric Co. The equipment will cost about \$300,000.

American Car & Foundry Motors Co. has received an order from Staten Island Coach Co., Staten Island, New York, for 57 motor coaches.

Inland Steel Co. has ordered from Plymouth Locomotive Works, division of Fate-Root-Heath Co., a 45-ton 320-hp. direct drive diesel Flexomotive locomotive for service in its open-hearth division. A 60-ton six-wheel Flexomotive is under construction in Plymouth shops for later delivery to Inland Steel Co.

RAILS AND TRACK SUPPLIES

Erie has divided 2127 tons of 112-lb. rails and 1236 tons of 131-lb. rails, with necessary fastenings, between Carnegie-Illinois Steel Corp. and Bethlehem Steel Co.

Shipments Off for U. S. Steel Corp.

UNITED STATES STEEL CORP. subsidiary companies shipped 441,570 tons of finished steel products in July, compared with 478,057 tons in June and 1,186,752 tons in July of last year. Shipments for the first seven months of 1938 totaled 3,451,924 tons compared with 8,801,026 tons in the comparable period of 1937.

MONTHLY SHIPMENTS OF FINISHED STEEL PRODUCTS BY UNITED STATES STEEL CORP.—TONS

Month	1934		1935		1936		1937		1938	
	Shipments	Per Cent of Capacity	Shipments	Per Cent of Capacity	Shipments	Per Cent of Capacity	Shipments	Per Cent of Capacity	Shipments	*Per Cent of Capacity
January	331,777	19.8	534,055	31.9	721,414	44.8	1,149,918	75.4	518,322	33.7
February	385,500	25.9	583,137	39.2	676,315	45.3	1,133,724	82.5	474,723	35.5
March	588,209	35.2	668,056	41.5	783,552	50.5	1,414,399	92.7	572,199	37.2
April	643,009	41.5	591,728	36.7	979,907	63.2	1,343,644	91.0	501,972	33.7
May	745,063	44.5	598,915	35.8	984,097	63.4	1,304,039	85.5	465,081	30.2
June	985,337	61.2	578,108	36.7	886,065	57.1	1,268,550	85.8	478,057	32.1
July	369,938	23.9	547,794	34.0	950,851	61.3	1,186,752	77.9	441,570	29.8
August	378,023	22.6	624,497	37.3	923,703	59.6	1,107,858	72.6	.....	.....
September	370,306	23.9	614,933	39.7	961,803	62.0	1,047,962	71.1	.....	.....
October	343,962	20.6	686,741	41.1	1,007,417	62.6	792,310	52.0	.....	.....
November	366,119	22.7	681,820	42.3	882,643	59.2	587,241	39.7	.....	.....
December	418,630	27.0	661,515	42.7	1,067,365	68.8	489,070	32.1	.....	.....
Minus yearly adjustment	(—19,907)	...	(—23,750)	...	(—40,859)	...	(—77,113)	...	.....	...
Total for year	5,905,966	30.6	7,347,549	38.1	10,784,273	58.2	12,748,354	70.4	.....	...

*Annual capacity 18,114,000 gross tons, with monthly percentages based on actual number of weeks in each month.

...NON-FERROUS...

... Domestic markets disturbed by war scare abroad ...
Practically all foreign prices are lower, but domestic
quotations are unchanged ... July copper statistics show
a further decrease in U. S. stocks.

NEW YORK, Aug. 16.—The war scare generated by the maneuvers of the German army was the dominating factor in all European markets in the past week. This scare brought with it a period of declining prices and sharply contracted sales, and found reflection in domestic markets, where consumers refrained from buying any supplies except those required for immediate needs. Price-wise, the only tangible effect here of

the disturbing conditions abroad, was the appearance of limited offerings of Standard copper on Commodity Exchange at reductions up to ¼c. below the producers' price. However, buyers showed no great interest in these concessions and producers continue to quote 10.125c. per lb., Connecticut Valley, on electrolytic metal. Export buying showed signs of new activity this morning, with the foreign price being around 9.96c. per lb.,

c.i.f., usual base ports, as against 10.35c. a week ago. Domestic stocks of refined copper showed a further decrease in July, with total reserves at the end of the month being 339,970 tons against 358,971 at the end of June. Refined production in July increased 3131 tons to 35,596. Shipments improved for the third consecutive month, the July total of 54,597 tons being 11,294 tons above the June figure.

Tin

Following the trend of the London market, the turnover in tin here in the past week was extremely small, with prices moving progressively to lower levels. Today's quotation on straits tin, New York, of 42.875c. per lb., is 0.375c. below the price of a week ago. Premiums on futures are still 10 points per month for September and beyond.

Zinc

Sales in the past week were 1504 tons against about 5000 tons in the previous week, the first major decrease since the buying wave started five weeks ago. Domestic quotations are firm and unchanged at 5.14c. per lb., New York, while this morning's London price was around 2.86c., as compared with 3.05c. a week ago. The market at present is receiving considerable strength from the strong ore position.

Lead

The past week was very quiet, with the sales volume dropping substantially below the previous week's level. Buying at present is limited to small lots for prompt shipment. Practically all of August's requirements have been covered, while about two-thirds of September's needs have yet to be bought. Domestic quotations are steady and unaltered at 4.90c. per lb., New York. The London price, however, has been moving consistently lower as a result of the confused European political outlook.

Brass and Bronze Ingots

The average prices received by members of the Non-Ferrous Ingot Metal Institute during the 28-day period ended Aug. 5, on 80-10-10 and 85-5-5-5 per cent metal, were 11.94c. and 10.301c. per lb. respectively. These compare with 10.828c. and 9.070c. in the preceding period. On Aug. 1 unfilled orders totaled 17,466 tons against 15,864 tons on July 1.

The Week's Prices. Cents Per Pound for Early Delivery

	Aug. 10	Aug. 11	Aug. 12	Aug. 13	Aug. 15	Aug. 16
Electrolytic copper, Conn.*	10.125	10.125	10.125	10.125	10.125	10.125
Lake copper, N. Y.	10.25	10.25	10.25	10.25	10.25	10.25
Straits tin, spot, New York	43.25	43.35	43.00	43.00	43.00	42.875
Zinc, East St. Louis	4.75	4.75	4.75	4.75	4.75	4.75
Zinc, New York	5.14	5.14	5.14	5.14	5.14	5.14
Lead, St. Louis	4.75	4.75	4.75	4.75	4.75	4.75
Lead, New York	4.90	4.90	4.90	4.90	4.90	4.90

*Delivered Connecticut Valley; price ¼c. lower delivered in New York.
Aluminum, virgin, 99 per cent plus 20.00c.-21.00c. a lb., delivered.
Aluminum No. 12 remelt No. 2 standard, in carloads, 19.00c. to 19.50c. a lb., delivered.
Nickel, electrolytic, 35c. to 36c. a lb. base refinery, in lots of 2 tons or more.
Antimony, Asiatic, 14.00c. a lb., prompt, f.o.b., New York.
Antimony, American, 10.75c. per lb., prompt shipment, New York.
Quicksilver, \$76.00 to \$77.00 per flask of 76 lb.
Brass ingots, commercial 85-5-5-5, 10.75c. a lb., less carload, delivered in Middle West ¼c. a lb. is added on orders for less than 40,000 lb.

From New York Warehouse

Delivered Prices, Base per Lb.

Tin, Straits pig	43.25c. to 44.25c.
Tin, bar	45.25c. to 46.25c.
Copper, Lake	11.375c. to 12.375c.
Copper, electrolytic	11.125c. to 12.125c.
Copper, castings	10.625c. to 11.625c.
*Copper sheets, hot-rolled	18.25c.
*High brass sheets	16.75c.
*Seamless brass tubes	19.50c.
*Seamless copper tubes	18.75c.
*Brass rod	12.75c.
Zinc, slabs	6.25c. to 7.25c.
Zinc, sheets (No. 9), casks, 1200 lb. and over	10.50c.
Lead, American pig	5.50c. to 6.50c.
Lead, bar	6.25c. to 6.625c.
Lead, sheets, cut	7.75c.
Antimony, Asiatic	14.75c. to 15.75c.
Alum., virgin, 99 per cent plus	22.50c. to 24.00c.
Alum., No. 1 for remelt- ing, 98 to 99 per cent	19.50c. to 21.00c.
Solder, ½ and ½	29.25c. to 30.25c.
Babbitt metal, commercial grade	20.00c. to 50.00c.

*These prices, which are also for delivery from Chicago and Cleveland warehouses, are quoted with the following percentages allowed off for extras; on copper sheets, 33 1/3; on brass sheets and rods, 40, and on brass and copper tubes, 25.

From Cleveland Warehouse

Delivered Prices per Lb.

Tin, Straits, pig	47.00c.
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Tin, bar	49.00c.
Copper, Lake	11.125c. to 11.375c.
Copper, electrolytic	11.125c. to 11.375c.
Copper, castings	10.925c.
Zinc, slabs	7.50c. to 7.75c.
Lead, American pig	5.40c. to 5.65c.
Lead, bar	8.50c.
Antimony, Asiatic	17.75c. to 18.00c.
Babbitt metal, medium grade	21.00c.
Babbitt metal, high grade	51.00c.
Solder, ½ and ½	28.00c.

Old Metals Per Lb., New York

Buying prices are paid by dealers for miscellaneous lots from smaller accumulators and selling prices are those charged to consumers after the metal has been prepared for their uses. (All prices are nominal.)

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, hvy. crucible	8.125c.	8.875c.
Copper, hvy. and wire	7.125c.	7.625c.
Copper, light and bottoms	6.375c.	6.625c.
Brass, heavy	4.375c.	4.875c.
Brass, light	3.375c.	4.125c.
Hvy. machine composition	6.875c.	8.375c.
No. 1 yel. brass turnings	4.25c.	4.75c.
No. 1 red brass or compos. turnings	6.375c.	6.875c.
Lead, heavy	3.50c.	3.875c.
Cast aluminum	6.50c.	7.75c.
Sheet aluminum	10.75c.	12.25c.
Zinc	2.125c.	3.375c.

IRON AND STEEL SCRAP

... Principal markets are softer ... Composite declines 42c. to \$14.41.

AUG. 16.—For the first time in eight weeks, a decline is recorded in the average price of No. 1 heavy melting steel. After having climbed rapidly upward since June 14, gaining \$3.83 in value in the process, the composite sagged this week 42c. to \$14.41. Brokers are paying 25c. a ton less in Pittsburgh than they did a week ago, and in the absence of mill sales, quotations at Philadelphia have been reduced 50c. At Chicago, prices are off a like amount, based on broker-dealer transactions. In most other markets, prices are unchanged or slightly stronger. Youngstown prices for No. 1 and bundles are up 50c. A number of railroad specialties are stronger at St. Louis, but brokers are offering 50c. less for No. 1 steel. An offering of 125 carloads of automotive bundled scrap brought prices in line with previously quoted figures at Detroit. Mill buying is still light and the market would be highly sensitive to heavy commitments.

Pittsburgh

Market is slightly easier this week owing to absence of consumer buying. However, a strong undertone continues to exist. Brokers are paying less for heavy melting steel than a week ago, but even though \$15 a ton is being freely offered, little is coming out at this price. No. 1 heavy melting is off 25c. a ton, being quotable this week at \$15 to \$15.50, making the average \$15.25 which covers the present conditions. The market would be highly sensitive to tonnage commitments. Railroad heavy melting steel brought \$16 on a recent list to a broker.

Chicago

Based on broker-dealer transactions at \$13.50, this market has declined 50c. a ton, heavy melting steel being quoted at \$14 top. Little frantic covering on the \$14.50 order reported last week is being seen because most sellers have the material on hand. Further buying, according to the leading buyer, will be unnecessary for 30 to 45 days. A sale of inferior quality heavy melting was made at \$13.50.

Philadelphia

The softness noted here last week has become more pronounced. Supplies are coming out more freely and mill purchases are completely lacking. In the absence of mill sales, quotations on Nos. 1 and 2 heavy melting scrap have been reduced 50c. on the basis of broker-dealer activity. At present mills are not too well provided with yard stocks and this factor will probably render this reversal of the price trend temporary.

Cleveland

The scarcity of sales has taken some of the power out of the upward surge of prices. Heavy melting at Youngstown is 50c. higher, however. One Youngstown consumer has attempted to slow down his incoming shipments. The Cleveland market has been inactive, with material moving elsewhere.

St. Louis

An East Side mill bought between 3000 and 4000 tons of heavy melting steel at present levels from four St. Louis dealers. Dealers further advanced their prices from 25c. to as much as \$1.50 a ton on some items. It is expected that the present prices will have the effect of bringing out scrap this week faster and more heavily, which would bring about a softening of the market. Railroad lists include: Southern, 4000 tons; Louisville & Nashville, 4300 tons; Alton, 2200 tons, and C. B. & Q., 600 tons of rails.

Cincinnati

Tension in the old materials market has eased, following sales to several local mills during the past week. While quantities are not disclosed, it is reported mills consider themselves fairly well covered. Prices are unchanged and although dealers sought to reduce bids, this failed to move any scrap. Chief dealer activity is now directed toward filling present contracts.

Detroit

An offering of 125 cars of bundles at Detroit, Pontiac, Grand Rapids and Flint early this week gave a market test which followed well substantiated prices, despite the fact that the general attitude was quieter.

New York

Buying prices are on the soft side in keeping with the trend in consumer delivered prices in eastern Pennsylvania. Export buying prices are also softer, though unchanged from last week, and an adjustment downward is not unlikely. Despite the excessive heat, a little better flow of material is reported and this should increase with cooler weather.

Boston

Business continues spotty, with shipments very largely in carlots to Pennsylvania and in smaller quantities to New England points. However, exporters have earmarked tonnages for future shipments, payable generally \$12.50 a ton delivered dock for No. 1 steel. A round tonnage is reported to have been earmarked at \$13 a ton. Brokers and dealers the past few days have obtained orders for machinery cast, New England delivery, and the market is now established at \$14 to \$14.50 a ton delivered yards, which is considerably higher than

the previous sales. For Pennsylvania delivery, \$3.40 a ton on cars is the general price for steel turnings, but for short shoveling turnings \$4.70 a ton has been offered. Skeleton consumers are temporarily out of the market, but an occasional carlot of breakable cast and shafting is going forward.

Buffalo

With the largest consumer remaining out of the market and giving no indication of its probable return, the scrap market continues strong but dull. Other than some small purchases of No. 1 machinery cast, no sales have been reported. The price on this commodity is up 50c., placing it at \$15.50 to \$16.

Government Buying of Steel Totals \$773,173

WASHINGTON.—The Walsh-Healey Government Contracts Board announces that contracts totaling \$773,173.64 for iron and steel products have been reported by four Government departments for the week ended Aug. 11. This compares with \$520,400.19 the week before and \$554,617.00 two weeks ago. Companies awarded contracts for more than \$40,000 include:

Columbia Steel Co., San Francisco, \$168,925.74, reinforcing steel for the Engineering Corps, War Department; Central Iron & Steel Co., Harrisburg, Pa., \$87,058.85, plates for the Navy; Sheet Metal Mfg. Co., Youngstown, \$77,957.28, sheets for the Navy; National Tube Co., Ellwood City, Pa., \$50,431.59, steel tubing for the Navy; Chicago Bridge & Iron Co., Birmingham, \$46,324, steel penstock liners for the TVA; Lukens Steel Co., Coatesville, Pa., \$43,166.89, plates for the Navy; and Martin-Parry Corp., York, Pa., \$41,964.00, adapters for the Ordnance Division, War Department.

For the same period, contracts totaling \$394,627.05 for non-ferrous metals and alloys were reported. Contracts covering transportation equipment totaled \$1,832,193.28, and for "other machinery," \$733,772.77.

7125 Pieces of Steel Put Up With Loss of Toenail

THE last rivet has been driven in the 18-story Perisphere and 700-ft. Trylon erected by American Bridge Co. as the "theme" buildings of the New York World's Fair. Said L. A. Paddock, bridge company president, during ceremonies following the jobs' completion, "The erection of 7125 pieces of steel in the two structures was completed without the loss of a single life and with only one minor accident—a crushed toenail."

Iron and Steel Scrap Prices

PITTSBURGH

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel	\$15.00 to \$15.50
Railroad hvy. mltng.	16.00 to 16.50
No. 2 hvy. mltng. steel	13.75 to 14.25
Scrap rails	16.00 to 16.50
Rails 3 ft. and under	16.50 to 17.00
Comp. sheet steel	15.00 to 15.50
Hand bundled sheets	14.00 to 14.40
Hvy. steel axle turn.	14.00 to 14.50
Machine shop turn.	9.50 to 10.00
Short shov. turn.	9.50 to 10.00
Mixed bor. & turn.	7.50 to 8.00
Cast iron borings	7.50 to 8.00
Cast iron carwheels	14.50 to 15.00
Hvy. breakable cast.	12.50 to 13.00
No. 1 cupola cast.	15.00 to 15.50
RR. knuckles & cplrs.	17.00 to 17.50
Rail coil & leaf springs	17.00 to 17.50
Rolled steel wheels	17.00 to 17.50
Low phos. billet crops	17.50 to 18.00
Low phos. punchings	16.00 to 16.50
Low phos. plate	16.00 to 16.50

PHILADELPHIA

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel	\$14.00 to \$14.50
No. 2 hvy. mltng. steel	12.50 to 13.00
Hydraulic bund., new	14.00 to 14.50
Hydraulic bund., old	11.00 to 11.50
Steel rails for rolling	17.00 to 17.50
Cast iron carwheels	17.00 to 17.50
Hvy. breakable cast.	15.50 to 16.00
No. 1 cast	16.00 to 16.50
Stove plate (steel wks.)	13.00 to 13.50
Railroad malleable	15.50 to 16.00
Machine shop turn.	7.50 to 8.00
No. 1 blast furnace	6.50 to 7.00
Cast borings	6.50 to 7.00
Heavy axle turnings	10.00 to 10.50
No. 1 low phos. hvy.	16.50 to 17.00
Couplers & knuckles	16.50 to 17.00
Rolled steel wheels	16.50 to 17.00
Steel axles	21.50 to 22.00
Shafting	19.00 to 19.50
No. 1 RR. wrought	15.00 to 15.50
Spec. iron & steel pipe	12.00 to 12.50
No. 1 forge fire	10.50 to 11.00
Cast borings (chem.)	9.50 to 10.00

CHICAGO

Delivered to Chicago district consumers:	
Per Gross Ton	
Hvy. mltng. steel	\$13.50 to \$14.00
Auto. hvy. mltng. steel alloy free	12.00 to 12.50
No. 2 auto. steel	11.50 to 12.00
Shoveling steel	13.50 to 14.00
Factory bundles	12.50 to 13.00
Dealers' bundles	12.00 to 12.50
Drop forge flashings	10.50 to 11.00
No. 1 busheling	12.50 to 13.00
No. 2 busheling, old	5.25 to 5.75
Rolled carwheels	16.00 to 16.50
Railroad tires, cut	16.50 to 17.00
Railroad leaf springs	16.50 to 17.00
Steel coup. & knuckles	16.00 to 16.50
Axle turnings	12.50 to 13.00
Coil springs	17.00 to 17.50
Axle turn. (elec.)	13.00 to 13.50
Low phos. punchings	16.50 to 17.00
Low phos. plates 12 in. and under	16.50 to 17.00
Cast iron borings	7.00 to 7.50
Short shov. turn.	7.50 to 8.00
Machine shop turn.	6.50 to 7.00
Rerolling rails	18.00 to 18.50
Steel rails under 3 ft.	16.50 to 17.00
Steel rails under 2 ft.	17.00 to 17.50
Angle bars, steel	16.00 to 16.50
Cast iron carwheels	14.50 to 15.00
Railroad malleable	16.00 to 16.50
Agric. malleable	11.00 to 11.50
Per Net Ton	
Iron car axles	19.00 to 19.50
Steel car axles	19.50 to 20.00
Locomotive tires	16.50 to 17.00
Pipes and flues	9.50 to 10.00
No. 1 machinery cast.	13.00 to 13.50
Clean auto. cast.	12.50 to 13.00
No. 1 railroad cast.	12.00 to 12.50
No. 1 agric. cast.	11.50 to 12.00
Stove plate	9.50 to 10.00
Grate bars	9.50 to 10.00
Brake shoes	10.50 to 11.00

YOUNGSTOWN

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel	\$14.50 to \$15.00
Hydraulic bundles	13.50 to 14.00
Machine shop turn.	11.00 to 11.50

CLEVELAND

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel	\$13.50 to \$14.00
No. 2 hvy. mltng. steel	12.50 to 13.00
Comp. sheet steel	12.75 to 13.25
Light bund. stampings	9.00 to 9.50
Drop forge flashings	10.00 to 10.50
Machine shop turn.	7.50 to 8.00
Short shov. turn.	6.75 to 7.25
No. 1 busheling	10.50 to 11.00
Steel axle turnings	10.00 to 10.50
Low phos. billet and bloom crops	17.00 to 17.50
Cast iron borings	6.00 to 6.50
Mixed bor. & turn.	6.00 to 6.50
No. 2 busheling	6.00 to 6.50
No. 1 cast	16.00 to 16.50
Railroad grate bars	9.50 to 10.00
Stove plate	10.00 to 10.50
Rails under 3 ft.	16.50 to 17.00
Rails for rolling	14.50 to 15.00
Railroad malleable	15.50 to 16.00
Cast iron carwheels	15.00 to 15.50

BUFFALO

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel	\$14.00 to \$14.50
No. 2 hvy. mltng. steel	12.00 to 12.50
Scrap rails	15.00 to 15.50
New hvy. bnded sheets	12.00 to 12.50
Old hydraulic bundles	10.50 to 11.00
Drop forge flashings	12.00 to 12.50
No. 1 busheling	12.00 to 12.50
Hvy. axle turnings	10.50 to 11.00
Machine shop turn.	6.75 to 7.25
Knuckles & couplers	16.50 to 17.00
Coil & leaf springs	16.50 to 17.00
Rolled steel wheels	16.00 to 16.50
Low phos. billet crops	15.50 to 16.00
Shov. turnings	6.75 to 7.25
Mixed bor. & turn.	6.75 to 7.25
Cast iron borings	6.50 to 7.00
Steel car axles	16.50 to 17.00
No. 1 machinery cast.	15.50 to 16.00
No. 1 cupola cast.	14.50 to 15.00
Stove plate	12.00 to 12.50
Steel rails under 3 ft.	17.50 to 18.00
Cast iron carwheels	13.50 to 14.00
Railroad malleable	14.50 to 15.00
Chemical borings	8.50 to 9.00

ST. LOUIS

Dealers' buying prices per gross ton delivered to consumer:	
Selected hvy. melting	\$12.00 to \$12.50
No. 1 hvy. melting	11.50 to 12.00
No. 2 hvy. melting	11.50 to 12.00
No. 1 locomotive tires	14.00 to 14.50
Misc. stand. sec. rails	14.00 to 14.50
Railroad springs	15.00 to 15.50
Bundled sheets	8.00 to 8.50
No. 1 busheling	7.00 to 7.50
Cast. bor. & turn.	4.25 to 4.75
Machine shop turn.	4.00 to 4.50
Heavy turnings	8.00 to 8.50
Rails for rolling	16.50 to 17.00
Steel car axles	18.00 to 18.50
Iron car axles	19.00 to 19.50
No. 1 RR. wrought	11.50 to 12.00
No. 2 RR. wrought	12.00 to 12.50
Steel rails under 3 ft.	14.50 to 15.00
Steel angle bars	14.50 to 15.00
Cast iron carwheels	13.00 to 13.50
No. 1 machinery cast.	12.50 to 13.00
Railroad malleable	12.00 to 12.50
No. 1 railroad cast	10.50 to 11.00
Stove plate	8.50 to 9.00
Grate bars	8.50 to 9.00
Brake shoes	9.00 to 9.50

CINCINNATI

Dealers' buying prices per gross ton at yards:	
No. 1 hvy. mltng. steel	\$11.75 to \$12.25
No. 2 hvy. mltng. steel	9.50 to 10.25
Scrap rails for mltng.	15.75 to 16.25
Loose sheet clippings	6.75 to 7.25
Hydrau. bnded sheets	10.75 to 11.25
Cast iron borings	3.75 to 4.25
Machine shop turn.	4.25 to 4.75
No. 1 busheling	8.50 to 9.00
No. 2 busheling	3.25 to 3.75
Rails for rolling	17.75 to 18.25
No. 1 locomotive tires	14.50 to 15.00
Short rails	18.25 to 18.75
Cast iron carwheels	13.00 to 13.50
No. 1 machinery cast.	12.50 to 13.00
No. 1 railroad cast.	11.50 to 12.00
Burnt cast	7.50 to 8.00
Stove plate	7.50 to 8.00
Agricul. malleable	12.00 to 12.50
Railroad malleable	15.00 to 15.50
Mixed hvy. cast.	10.00 to 10.50

BIRMINGHAM

Per gross ton delivered to consumer:	
Hvy. melting steel	\$12.50 to \$14.00
Scrap steel rails	14.50 to 15.00
Short shov. turnings	7.50 to 8.10
Stove plate	9.00 to 10.00
Steel axles	15.00 to 16.00
Iron axles	15.00 to 16.00
No. 1 RR. wrought	10.00
Rails for rolling	16.00 to 16.50
No. 1 cast	14.50
Tramcar wheels	14.00

DETROIT

Dealers' buying prices per gross ton:	
No. 1 hvy. mltng. steel	\$10.00 to \$10.50
No. 2 hvy. mltng. steel	8.50 to 9.00
Borings and turnings	6.50 to 7.00
Long turnings	6.50 to 7.00
Short shov. turnings	7.50 to 8.00
No. 1 machinery cast.	11.50 to 12.00
Automotive cast	12.50 to 13.00
Hvy. breakable cast.	9.00 to 9.50
Hydraul. comp. sheets	11.50 to 12.00
Stove plate	8.00 to 8.50
New factory bushel	11.00 to 11.50
Old No. 2 busheling	3.00 to 3.50
Sheet clippings	8.00 to 8.50
Flashings	9.00 to 9.50
Low phos. plate scrap	11.50 to 12.00

NEW YORK

Dealers' buying prices per gross ton on cars:	
No. 1 hvy. mltng. steel	\$10.00 to \$10.50
No. 2 hvy. mltng. steel	8.50 to 9.00
Hvy. breakable cast.	12.00 to 12.50
No. 1 machinery cast.	12.00 to 12.50
No. 2 cast	9.00 to 9.50
Stove plate	9.50 to 10.00
Steel car axles	20.00 to 20.50
Shafting	15.00 to 15.50
No. 1 RR. wrought	11.00 to 11.50
No. 1 wrought long	9.50 to 10.00
Spec. iron & steel pipe	8.50 to 9.00
Rails for rolling	16.00 to 16.50
Clean steel turnings*	3.50 to 4.00
Cast borings*	3.00 to 3.50
No. 1 blast furnace	3.00 to 3.50
Cast borings (chem.)	9.50 to 10.00
Unprepared yard scrap	5.00 to 5.50
Light iron	3.00 to 3.50
Per gross ton, delivered local foundries	
No. 1 machn. cast†	\$13.50 to \$14.00
No. 2 cast†	10.50 to 11.00

* 15¢ loss for truck loads.

† Northern N. J. prices are \$2 to \$2.50 higher.

BOSTON

Dealers' buying prices per gross ton:	
No. 1 hvy. mltng. steel	Nominal
Scrap rails	Nominal
No. 2 steel	Nominal
Breakable cast	\$10.75 to \$11.00
Machine shop turn.	3.40 to 4.70
Mixed bor. & turn.	3.30
Bun. skeleton long	6.75
Shafting	14.25 to 14.50
Cast bor. chemical	5.50 to 5.75
Per gross ton delivered consumer's yards:	
Textile cast	\$14.00 to \$14.50
No. 1 machine cast	14.00 to 14.50

PACIFIC COAST

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel	\$11.65 to \$12.15
No. 2 hvy. mltng. steel	10.65 to 11.15

CANADA

Dealers' buying prices at their yards, per gross ton:	
Toronto Montreal	
No. 1 hvy. mltng. steel	\$9.50 \$9.00
No. 2 hvy. mltng. steel	8.00 7.50
Mixed dealers steel	7.00 6.50
Scrap pipe	5.50 5.00
Steel turnings	4.50 4.00
Cast borings	3.50 3.00
Machinery cast	15.00 14.00
Dealers cast	13.00 12.00
Stove plate	11.00 10.50

EXPORT

Dealers' buying prices per gross ton:	
New York, truck lots, delivered, barges	
No. 1 hvy. mltng. steel	\$11.00 to \$11.50
No. 2 hvy. mltng. steel	9.50 to 10.00
No. 2 cast	10.00 to 11.00
Stove plate	9.00 to 10.00

Boston on cars at Army Base or Mystic Wharf

No. 1 hvy. mltng. steel	\$12.50 to \$13.00
No. 2 hvy. mltng. steel	11.50
Rails (scrap)	\$12.50 to 12.75

Philadelphia, delivered alongside boats, Port Richmond

No. 1 hvy. mltng. steel	Nominal
No. 2 hvy. mltng. steel	Nominal

PRICES ON FINISHED AND SEMI-FINISHED IRON AND STEEL

SEMI-FINISHED STEEL

Billets, Blooms and Slabs

Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham, Sparrows Point (Rerolling only). Prices delivered Detroit are \$2 higher. F.o.b. Duluth, billets only, \$2 higher.

Per Gross Ton

Rerolling\$34.00
Forging quality 40.00

Sheet Bars

Pittsburgh, Chicago, Cleveland, Youngstown, Buffalo, Canton, Sparrows Point, Md.

Per Gross Ton

Open-hearth or bessemer\$34.00

Skelp

Pittsburgh, Chicago, Youngstown, Coatesville, Pa., Sparrows Point, Md.

Per Lb.

Grooved, universal and sheared1.90c.

Wire Rods

(No. 5 to 9/32 in.)

Per Gross Ton

Pittsburgh, Chicago or Cleveland\$43.00
Worcester, Mass. 45.00
Birmingham 43.00
San Francisco 52.00
Rods over 9/32 in. or 47/64 in., inclusive, \$5 a ton over base.

SOFT STEEL BARS

Base per Lb.

Pittsburgh, Chicago, Gary, Cleveland, Buffalo and Birmingham 2.25c.
Detroit, delivered 2.35c.
Duluth 2.35c.
Philadelphia delivered 2.57c.
New York 2.59c.
On cars dock Gulf ports 2.60c.
On cars dock Pacific ports ... 2.85c.

RAIL STEEL BARS

(For merchant trade)

Pittsburgh, Chicago, Gary, Cleveland, Buffalo, Birmingham 2.10c.
On cars dock Tex. Gulf ports.. 2.45c.
On cars dock Pacific ports.. 2.70c.

BILLET STEEL REINFORCING BARS

(Straight lengths as quoted by distributors)

Pittsburgh, Chicago, Gary, Birmingham, Buffalo, Cleveland, Youngstown or Sparrows Pt. 2.05c.
Detroit, delivered 2.15c.
On cars dock Tex. Gulf ports.. 2.40c.
On cars dock Pacific ports.... 2.50c.

RAIL STEEL REINFORCING BARS

(Straight lengths as quoted by distributors)

Pittsburgh, Chicago, Gary, Buffalo, Cleveland, Youngstown or Birmingham 1.90c.
Detroit, delivered 2.00c.
On cars dock Tex. Gulf ports. 2.25c.
On cars dock Pacific ports.... 2.35c.

The above prices on reinforcing bars are subject to concessions of \$3 and \$4 a ton or more on larger jobs.

IRON BARS

Chicago and Terre Haute 2.15c.
Pittsburgh (refined) 3.60c.

COLD FINISHED BARS AND SHAFTING*

Base per Lb.

Pittsburgh, Buffalo, Cleveland, Chicago and Gary 2.70c.
Detroit 2.75c.

* In quantities of 10,000 to 19,999 lb.

PLATES

Base per Lb.

Pittsburgh, Chicago, Gary, Birmingham, Sparrows Point, Cleveland, Youngstown, Coatesville, Claymont, Del. 2.10c.
Philadelphia, del'd 2.15c.
New York, del'd 2.29c.
On cars dock Gulf ports 2.45c.
On cars dock Pacific ports.... 2.70c.
Wrought iron plates, P't'g. 3.80c.

FLOOR PLATES

Pittsburgh or Chicago 3.35c.
New York, del'd 3.71c.
On cars dock Gulf ports 3.70c.
On cars dock Pacific ports.... 3.95c.

STRUCTURAL SHAPES

Base per Lb.

Pittsburgh, Chicago, Gary, Buffalo, Bethlehem or Birmingham 2.10c.
Philadelphia, del'd 2.215c.
New York, del'd 2.27c.
On cars dock Gulf ports 2.45c.
On cars dock Pacific ports.... 2.70c.

STEEL SHEET PILING

Base per Lb.

Pittsburgh, Chicago or Buffalo 2.40c.
On cars dock Gulf ports 2.85c.
On cars dock Pacific ports 2.90c.

RAILS AND TRACK SUPPLIES

F.o.b. Mill

Standard rails, heavier than 60 lb., per gross ton.....\$42.50
Angle bars, per 100 lb. 2.80

F.o.b. Basing Points

Light rails (from billets) per gross ton\$40.00
Light rails (from rail steel) per gross ton 39.00

Base per Lb.

Spikes 3.15c.
Tie plates, steel 2.30c.
Tie plates, Pacific Coast ports. 2.40c.
Track bolts, to steam railroads 4.35c.
Track bolts, to jobbers, all sizes (per 100 counts)

65-5 per cent off list

Basing points on light rails are Pittsburgh, Chicago and Birmingham; on spikes and tie plates, Pittsburgh, Chicago, Portsmouth, Ohio, Weirton, W. Va., St. Louis, Kansas City, Minnequa, Colo., Birmingham and Pacific Coast ports; on tie plates alone, Steelton, Pa., Buffalo; on spikes alone, Youngstown, Lebanon, Pa., Richmond, Va.

SHEETS

PRICES F.O.B. UNLESS OTHERWISE NOTED

Hot Rolled

Base per Lb.

Pittsburgh, Gary, Birmingham, Buffalo, Sparrows Point, Cleveland, Youngstown or Middletown 2.15c.
Detroit, delivered 2.25c.
Philadelphia, delivered 2.32c.
Granite City 2.25c.
On cars dock Pacific ports... 2.75c.
Wrought iron, Pittsburgh..... 4.25c.

Cold Rolled*

Pittsburgh, Gary, Buffalo, Youngstown, Cleveland or Middletown 3.20c.
Detroit, delivered 3.30c.
Granite City 3.30c.
Philadelphia, delivered 3.52c.
On cars dock Pacific ports.... 3.80c.

* Mill run sheets are 10c. per 100 lb. less than base; and primes only, 25c. above base.

Galvanized Sheets, 24 Gage

Pittsburgh, Gary, Sparrows Point, Buffalo, Middletown, Youngstown or Birmingham 3.50c.
Philadelphia, del'd 3.67c.
Granite City 3.60c.
On cars dock Pacific ports.... 4.10c.
Wrought iron, Pittsburgh..... 6.10c.

Electrical Sheets

(F.o.b. Pittsburgh)

Base per Lb.

Field grade 3.20c.
Armature 3.55c.
Electrical 4.05c.
Special Motor 4.95c.
Special Dynamo 5.65c.
Transformer 6.15c.
Transformer Special 7.15c.
Transformer Extra Special.... 7.65c.

Silicon Strip in coils—Sheet price plus silicon sheet extra width extras plus 25c. per 100 lb. for coils. Pacific ports add 70c. a 100 lb.

Long Ternes

No. 24 unassorted 8-lb. coating f.o.b. Pittsburgh or Gary.... 3.95c.
F.o.b. cars dock Pacific ports. 4.65c.

Vitreous Enameling Stock, 20 Gage

Pittsburgh, Gary Youngstown, Middletown or Cleveland.... 3.35c.
Detroit, del'd 3.45c.
Granite City 3.45c.
On cars dock Pacific ports ... 3.95c.

TIN MILL PRODUCTS

Black Plate

Pittsburgh 3.15c.
Gary 3.15c.
Granite City 3.25c.
On cars dock Pacific ports, boxed 4.10c.

Tin Plate

Per Base Box

Standard cokes, Pittsburgh and Gary\$5.35
Standard cokes, Granite City... 5.45

Special Coated Manufacturing Ternes

Per Base Box

Pittsburgh\$4.65
Gary 4.65
Granite City 4.75

Roofing Terne Plate

(F.o.b. Pittsburgh)

(Per Package, 112 sheets, 20 x 28 in.)
8-lb. coating I.C.\$12.00
15-lb. coating I.C. 14.00
20-lb. coating I.C. 15.00
25-lb. coating I.C. 16.00
30-lb. coating I.C. 17.25
40-lb. coating I.C. 19.50

HOT ROLLED STRIP

Prices F.o.b. Unless Otherwise Noted (Widths up to 12 in.)

Base per Lb.

Pittsburgh, Chicago, Gary, Cleveland, Middletown, Youngstown or Birmingham 2.15c.
Detroit, delivered 2.25c.

Cooperage Stock

Pittsburgh & Chicago 2.25c.

COLD ROLLED STRIP*

Base per Lb.

Pittsburgh, Youngstown or Cleveland 2.95c.
Chicago 3.05c.
Detroit, delivered 3.05c.
Worcester 3.15c.

* Carbon 0.25 and less.

Commodity Cold Rolled Strip

Pittsburgh, Youngstown or Cleveland 3.10c.
Detroit, delivered 3.20c.
Worcester 3.50c.

COLD ROLLED SPRING STEEL

Pittsburgh and Cleveland Worcester

Carbon	0.26-0.50%	2.95c.	3.15c.
Carbon	.51-.75	4.30c.	4.50c.
Carbon	.76-1.00	6.15c.	6.35c.
Carbon	1.01 to 1.25	8.35c.	8.55c.

WIRE PRODUCTS

(Carload lots, f.o.b. Pittsburgh, Chicago, Cleveland and Birmingham)
To Manufacturing Trade

	Per Lb.
Bright wire	2.60c.
Galvanized wire	3.15c.
Spring wire	3.20c.

To the Trade

	Base per Keg
Standard wire nails	\$2.45
Coated nails	2.45
Cut nails, carloads	3.60

Base per 100 Lb.

Annealed fence wire	\$2.95
Galvanized fence wire	3.35
Polished staples	3.15
Galvanized staples	3.40
Barbed wire, galvanized	3.20
Twisted barbed wire	3.20
Woven wire fence, base column. 67	
Single loop bale ties, base col... 56	

Note: Birmingham base same on above items, except spring wire.

Add \$4 a ton for Mobile, Ala.; \$5 for New Orleans; \$6 for Lake Charles to above bases, except on galvanized and annealed merchant fence wire, which are \$1 a ton additional in each case.

STEEL AND WROUGHT IRON PIPE AND TUBING

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

F.o.b. Pittsburgh only on wrought iron pipe.

Butt Weld

Steel	Black Galv.	Wrought Iron	Black Galv.
1 in.	56	36	36
1 1/2 in.	59	43 1/2	43 1/2
2 in.	63 1/2	54	54
2 1/2 in.	66 1/2	58	58
3 in.	68 1/2	60 1/2	60 1/2

Lap Weld

2 in.	61	52 1/2	52 1/2
2 1/2 in.	64	55 1/2	55 1/2
3 in.	66	57 1/2	57 1/2
3 1/2 in.	68	59 1/2	59 1/2
4 in.	70	61 1/2	61 1/2
4 1/2 in.	72	63 1/2	63 1/2
5 in.	74	65 1/2	65 1/2
5 1/2 in.	76	67 1/2	67 1/2
6 in.	78	69 1/2	69 1/2
6 1/2 in.	80	71 1/2	71 1/2

Butt Weld, extra strong, plain ends	Black Galv.	Wrought Iron	Black Galv.
1 in.	54 1/2	41 1/2	41 1/2
1 1/2 in.	56 1/2	43 1/2	43 1/2
2 in.	58 1/2	45 1/2	45 1/2
2 1/2 in.	60 1/2	47 1/2	47 1/2
3 in.	62 1/2	49 1/2	49 1/2
3 1/2 in.	64 1/2	51 1/2	51 1/2
4 in.	66 1/2	53 1/2	53 1/2
4 1/2 in.	68 1/2	55 1/2	55 1/2
5 in.	70 1/2	57 1/2	57 1/2
5 1/2 in.	72 1/2	59 1/2	59 1/2
6 in.	74 1/2	61 1/2	61 1/2
6 1/2 in.	76 1/2	63 1/2	63 1/2

Lap Weld, extra strong, plain ends	Black Galv.	Wrought Iron	Black Galv.
2 in.	59	51 1/2	51 1/2
2 1/2 in.	63	55 1/2	55 1/2
3 in.	66 1/2	59	59
3 1/2 in.	69 1/2	62 1/2	62 1/2
4 in.	72 1/2	65 1/2	65 1/2
4 1/2 in.	75 1/2	68 1/2	68 1/2
5 in.	78 1/2	71 1/2	71 1/2
5 1/2 in.	81 1/2	74 1/2	74 1/2
6 in.	84 1/2	77 1/2	77 1/2
6 1/2 in.	87 1/2	80 1/2	80 1/2

On butt-weld and lap-weld steel pipe jobbers are granted a discount of 5%. On less-than-carload shipments prices are determined by adding 25 and 30% and the carload freight rate to the base card.

F.o.b. Gary prices are two points lower discount or \$4 a ton higher than Pittsburgh or Lorain on lap weld and one point lower discount, or \$2 a ton higher, on all butt weld 3 in. and smaller.

Boiler Tubes

Seamless Steel and Lap Weld Commercial Boiler Tubes and Locomotive Tubes. Minimum Wall. (Net base prices per 100 ft. f.o.b. Pittsburgh in carload lots)

	Seamless	Lap Weld
	Cold Drawn	Hot Rolled
1 in. o.d.	13 B.W.G. \$ 9.01	\$ 7.82
1 1/4 in. o.d.	13 B.W.G. 10.67	9.26
1 1/2 in. o.d.	13 B.W.G. 11.79	10.23
1 3/4 in. o.d.	13 B.W.G. 13.42	11.64
2 in. o.d.	13 B.W.G. 15.03	13.04
2 1/4 in. o.d.	13 B.W.G. 16.76	14.54
2 1/2 in. o.d.	12 B.W.G. 18.45	16.01
2 3/4 in. o.d.	12 B.W.G. 20.21	17.54
3 in. o.d.	12 B.W.G. 21.42	18.59
3 1/4 in. o.d.	11 B.W.G. 22.48	19.50
3 1/2 in. o.d.	11 B.W.G. 23.37	20.42
4 in. o.d.	10 B.W.G. 35.20	30.54
4 1/4 in. o.d.	10 B.W.G. 43.04	37.35
5 in. o.d.	9 B.W.G. 54.01	46.87
6 in. o.d.	7 B.W.G. 82.93	71.96

Extras for less carload quantities:

	Base
40,000 lb. or ft. or over	5%
30,000 lb. or ft. to 39,999 lb. or ft.	5%
20,000 lb. or ft. to 29,999 lb. or ft.	10%
10,000 lb. or ft. to 19,999 lb. or ft.	20%
5,000 lb. or ft. to 9,999 lb. or ft.	30%
2,000 lb. or ft. to 4,999 lb. or ft.	45%
Under 2,000 lb. or ft.	65%

CAST IRON WATER PIPE

Per Net Ton

*6-in. and larger, del'd Chicago.....	\$51.00
6-in. and larger, del'd New York	49.00
*6-in. and larger, Birmingham.....	43.00
6-in. and larger, f.o.b. dock, San Francisco or Los Angeles.....	52.00
F.o.b. dock, Seattle.....	52.00
4-in. f.o.b. dock, San Francisco or Los Angeles	55.00
F.o.b. dock, Seattle	52.00

Class "A" and gas pipe, \$3 extra 4-in. pipe is \$3 a ton above 6-in.

Prices for lots of less than 200 tons. For 200 tons and over, 6-in. and larger is \$42, Birmingham, and \$50 delivered Chicago and 4-in. pipe, \$45, Birmingham, and \$54 delivered Chicago.

BOLTS, NUTS, RIVETS, SET SCREWS

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

Per Cent Off List

Machine and carriage bolts:	
1/2 in. & 6 in. and smaller, 65, 5 and 5*	
Larger and longer up to	
1 in.	60, 10 and 5*
1 1/2 in. and larger.....	60, 5 and 5*
Lag bolts	60, 10 and 5
Flow bolts, Nos. 1, 2, 3	
and 7	65, 5 and 5
Hot pressed nuts, and c.p.c.	
and t nuts, square or hex.	
blank or tapped:	
1/2 in. and smaller	65 and 5
9/16 in. to 1 in. inclusive.....	60, 5 and 5
1 1/2 in. and larger.....	60 and 5

* Less carload lots and less than full container quantity. Less carload lots in full container quantity, an additional 10 per cent discount; carload lots and full container quantity, still another 5 per cent discount.

Semi-finished hexagon units, U.S.S. and S.A.E.:

1/2 in. and smaller.....	60, 10 and 5
9/16 in. to 1 in. inclusive.....	60, 5 and 5
1 in. and larger	60 and 5
Stove bolts in packages, nuts attached	70 and 5
Stove bolts in packages, with nuts separate	70, 10 and 5
Stove bolts in bulk.....	80 and 5

On stove bolts freight is allowed to destination on 200 lb. and over.

Large Rivets

(1/2-in. and larger)

Base per 100 Lb.

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham

Small Rivets

(7/16-in. and smaller)

Per Cent Off List

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham

Cap and Set Screws

(Freight allowed to destination)

Per Cent Off List

Milled cap screws, 1 in. dia. and smaller	50, 10 and 5
Milled standard set screws, case hardened, 1 in. dia. and smaller	75 and 5
Milled headless set screws, cut thread 1/2 in. and smaller.....	75
Upset hex. head cap screws U.S.S. or S.A.E. thread 1 in. and smaller	70, 10 and 10
Upset set screws, cup and oval points	80 and 5
Milled studs	65

Alloy and Stainless Steel

Alloy Steel Blooms, Billets and Slabs

F.o.b. Pittsburgh, Chicago, Canton, Massillon, Buffalo, Bethlehem. Base price, \$56.00 a gross ton.

Alloy Steel Bars

F.o.b. Pittsburgh, Chicago, Buffalo, Bethlehem, Massillon or Canton. Open-hearth grade, base.....2.80c. Delivered, Detroit

S.A.E.	Alloy
Series	Differential
Numbers	per 100 Lb.
200 (1/4% Nickel).....	\$0.35
2100 (1 1/4% Nickel).....	0.75
2300 (3/4% Nickel).....	1.55

2500 (5% nickel)	\$2.25
3100 Nickel-chromium	0.70
3200 Nickel-chromium	1.85
3300 Nickel-chromium	3.80
3400 Nickel-chromium	3.20
4100 Chromium-molybdenum (0.15 to 0.25 Molybdenum)	0.55
4100 Chromium-molybdenum (0.25 to 0.40 Molybdenum)	0.75
4600 Nickel - molybdenum (0.20 to 0.30 Mo. 1.50 to 2.00 Ni)	1.10
5100 Chrome steel (0.60-0.90 Cr.)	0.35
5100 Chrome steel (0.80-1.10 Cr.)	0.45
5100 Chromium spring steel.....	0.15
6100 Chromium-vanadium bar..	1.20
6100 Chromium-vanadium spring steel	0.85
Chromium-nickel-vanadium ..	1.50
Carbon-vanadium	0.85

These prices are for hot-rolled steel bars. The differential for most grades in electric furnace steel is 50c. higher. Slabs with a section area of 16 in. and 2 1/2 in. thick or over take the billet base.

Alloy Cold-Finished Bars

F.o.b. Pittsburgh, Chicago, Gary, Cleveland or Buffalo, 3.40c. base per lb. Delivered Detroit, 3.50c., carlots.

CORROSION & HEAT RESISTANT ALLOYS

(Base prices, cents per lb., f.o.b. Pittsburgh)

Chrome-Nickel

	No. 304	No. 302
Forging billets	21.25c.	20.40c.
Bars	25c.	24c.
Plates	29c.	27c.
Structural shapes..	25c.	24c.
Sheets	36c.	34c.
Hot-rolled strip ..	23.50c.	21.50c.
Cold-rolled strip ..	30c.	28c.
Drawn wire	25c.	24c.

Straight Chrome

	No. 410	No. 430	No. 442	No. 446
Bars ..	18.50c.	19c.	22.50c.	27.50c.
Plates ..	21.50c.	22c.	25.50c.	30.50c.
Sheets ..	26.50c.	29c.	32.50c.	36.50c.
Hot strip ..	17c.	17.50c.	23c.	28c.
Cold stp. ..	22c.	22.50c.	28.50c.	36.50c.

TOOL STEEL

High speed	67c.
High-carbon-chrome	43c.
Oil-hardening	24c.
Special	22c.
Extra	18c.
Regular	14c.

Prices for warehouse distribution to all points on or East of Mississippi River are 2c. a lb. higher. West of Mississippi quotations are 3c. a lb. higher.

British and Continental

BRITISH

Per Gross Ton f.o.b. United Kingdom Ports

Ferromanganese, export	£20 Nominal
Tin plate, per base box	20s. 3d. to 21s. 6d.
Steel bars, open hearth.....	£11
Beams, open-hearth	£10 12s. 6d.
Channels, open-hearth	£10 17s. 6d.
Angles, open-hearth	£10 12s. 6d.
Black sheets, No. 24 gage.....	£13
Galvanized sheets, No. 24 gage	£16 15s.

CONTINENTAL

Per Gross Ton, Gold f. f.o.b. Continental Ports

Billets, Thomas	Nominal
Wire rods, No. 5 B.W.G.	£5 10s.
Steel bars, merchant.....	£5 5s.
Sheet bars	Nominal
Plate 1/4 in. and up.....	£5 7s.
Plate 3/16 in. and 5 mm.....	£5 13s.
Sheets 1/4 in.	£5 9s. 6d.
Beams, Thomas	£4 18s.
Angles (Basic)	£4 18s.
Hoops and strip, base.....	£5 15s.

RAW MATERIALS PRICES

PIG IRON

No. 2 Foundry

F.o.b. Everett, Mass.	\$21.75
F.o.b. Bethlehem, Birdsboro and Swedeland, Pa., and Sparrows Point, Md.	21.00
Delivered Brooklyn	23.50
Delivered Newark or Jersey City	22.53
Delivered Philadelphia	21.84
F.o.b. Neville Island, Erie, Pa., Toledo, Chicago and Youngstown*	20.00
F.o.b. Buffalo	20.00
F.o.b. Detroit	20.00
Southern, delivered Cincinnati	20.06
Northern, delivered, Cincinnati	20.44
F.o.b. Duluth	20.50
F.o.b. Provo, Utah	22.00
Delivered, San Francisco, Los Angeles or Seattle	26.95
F.o.b. Birmingham*	16.38

* Delivered prices on southern iron for shipment to northern points are 38c. a ton below delivered prices from nearest northern basing point on iron with phosphorus content of 0.70 per cent and over.

Malleable

Base prices on malleable iron are 50c. a ton above No. 2 foundry quotations at Everett, Eastern Pennsylvania furnaces, Erie and Buffalo. Elsewhere they are the same, except at Birmingham and Provo, which are not malleable iron basing points.

Basic

F.o.b. Everett, Mass.	\$21.25
F.o.b. Bethlehem, Birdsboro, Swedeland and Steelton, Pa., and Sparrows Point, Md.	20.50
F.o.b. Buffalo	19.00
F.o.b. Neville Island, Erie, Pa., Toledo, Chicago and Youngstown	19.50
Delivered Philadelphia	21.34
Delivered Canton, Ohio	20.89
Delivered Mansfield, Ohio	21.44
F.o.b. Birmingham	15.00

Bessemer

F.o.b. Buffalo	\$21.00
F.o.b. Everett, Mass.	22.75
F.o.b. Bethlehem, Birdsboro and Swedeland, Pa.	22.00
Delivered Newark or Jersey City	23.53
Erie, Pa., and Duluth	21.00
F.o.b. Neville Island, Toledo, Chicago and Youngstown*	20.50
F.o.b. Birmingham	21.00
Delivered Cincinnati	21.11
Delivered Canton, Ohio	21.89
Delivered Mansfield, Ohio	22.44

Low Phosphorus

Basing points: Birdsboro, Pa., Steelton, Pa., and Standish, N. Y.	\$25.50
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Gray Forge

Valley or Pittsburgh furnace	\$19.50
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Charcoal

Lake Superior furnace	\$25.00
Delivered Chicago	28.34

Canadian Pig Iron

Per Gross Ton

Delivered Toronto	
No. 1 fdy., sil. 2.25 to 2.75	\$26.50
No. 2 fdy., sil. 1.75 to 2.25	25.50
Malleable	26.00
Basic	25.50

Delivered Montreal

No. 1 fdy., sil. 2.25 to 2.75	\$27.50
No. 2 fdy., sil. 1.75 to 2.25	27.00
Malleable	27.50
Basic	27.00

FERROALLOYS

Ferromanganese

F.o.b. New York, Philadelphia, Baltimore, Mobile or New Orleans.	
Per Gross Ton	
Domestic, 80% (carload)	\$92.50

Spiegeleisen

Per Gross Ton Furnace

Domestic 19 to 21%	\$28.00
Domestic, 26 to 28%	33.00

Electric Ferrosilicon

Per Gross Ton Delivered; Lump Size

50% (carload lots, bulk)	\$69.50*
50% (ton lots in 50 gal. bbl.)	80.50*
75% (carload lots, bulk)	126.00*
75% (ton lots in 50 gal. bbl.)	139.00*

Bessemer Ferrosilicon

F.o.b. Furnace, Jackson, Ohio

Per Gross Ton

10.00 to 10.50%	\$29.50
For each additional 0.50% silicon up to 12%, 50c. a ton is added. Above 12% add 75c. per ton.	
For each unit of manganese over 2%, \$1 per ton additional. Phosphorus 0.75% or over, \$1 per ton additional.	
Base prices at Buffalo are \$1.25 a ton higher than at Jackson.	

Silvery Iron

Per Gross Ton

F.o.b. Jackson, Ohio, 5.00 to 5.50%	\$23.50
For each additional 0.5% silicon up to 12%, 50c. a ton is added. Above 12% add 75c. a ton.	
The lower all-rail delivered price from Jackson or Buffalo is quoted with freight allowed. Base prices at Buffalo are \$1.25 a ton higher than at Jackson.	
Manganese, each unit over 2%, \$1 a ton additional. Phosphorus 0.75% or over, \$1 a ton additional.	

Ferrochrome

Per lb. Contained Cr., Delivered Carlots, Lump Size, on Contract	
4 to 6% carbon	10.50c.*
2% carbon	16.50c.*
1% carbon	17.50c.*
0.10% carbon	19.50c.*
0.06% carbon	20.00c.*

Silico-manganese

Per Gross Ton, Delivered, Lump Size, Bulk, on Contract

3% carbon	\$92.75
2.50% carbon	97.75
2% carbon	102.75
1% carbon	112.75

Other Ferroalloys

Ferrotungsten, per lb. contained W del. carloads, nominally	\$2.00
Ferrotungsten, lots of 500 lbs. nominally	2.05
Ferrotungsten, smaller lots, nominally	2.10
Ferrovandium, contract, per lb. contained V., delivered	\$2.70 to \$2.90†
Ferrocolumbium, per lb. contained columbium, f.o.b. Niagara Falls, N. Y., tons lots.	\$2.25†
Ferrocobaltititanium, 15 to 18% Ti, 7 to 8% C, f.o.b. furnace carload and contract per net ton	\$142.50
Ferrocobaltititanium, 17 to 20% Ti, 3 to 5% C, f.o.b. furnace, carload and contract, per net ton	\$157.50
Ferrophosphorus, electric or blast furnace material, in carloads, f.o.b. Anniston, Ala., for 18%, with \$3 unitage, freight equalized with Rockdale, Tenn., per gross ton	\$58.50
Ferrophosphorus, electrolytic, 23-26% in car lots, f.o.b. Monsanto (Siglo), Tenn., 24%, per gross ton, \$3 unitage, freight equalized with Nashville	\$75.00
Ferromolybdenum, per lb. Mo. f.o.b. furnace	95c.
Calcium molybdate, per lb. Mo. f.o.b. furnace	80c.

*Spot prices are \$5 per ton higher
†Spot prices are 10c. per lb. of contained element higher.

ORES

Lake Superior Ores

Delivered Lower Lake Ports

Per Gross Ton	
Old range, Bessemer, 51.50%	\$5.25
Old range, non-Bessemer, 51.50%	5.10
Mesabi, Bessemer, 51.50%	5.10
Mesabi, non-Bessemer, 51.50%	4.95
High phosphorus, 51.50%	4.85

Foreign Ore

C.I.F. Philadelphia or Baltimore

Per Unit

Iron, low phos., copper free, 55 to 58% dry, Algeria, nominal	17.00c.
Iron, low phos., Swedish, average, 68½% iron. Nominally 17 to 18c.	
Iron, basic or foundry, Swedish, aver. 65% iron. Nominally 15c.	
Iron, basic or foundry, Russian, aver. 65% iron	Nominal
Man., Caucasian, washed	
52%	35c.
Man., African, Indian	33c.
44-48%	33c.
Man., African, Indian	
49-51%	35c.
Man., Brazilian, 46 to 48½%	33c.

Per Short Ton Unit

Tungsten, Chinese, Wolframite, duty paid, delivered	\$20.00
Tungsten, domestic, scheelite delivered	\$20.00 to 21.00
Chrome ore (lump) c.i.f. Atlantic Seaboard, per gross ton: South African (low grade)	15.00
Rhodesian, 45%	20.00
Rhodesian, 48%	23.50
Turkish, 48-49%	24.00 to 25.00
Turkish, 45-46%	22.50 to 23.00
Turkish, 44%	18.00 to 18.50
Chrome concentrates (Turkish) c.i.f. Atlantic Seaboard, per gross ton:	
50%	24.50 to 25.50
48-49%	24.50 to 25.00

FLUORSPAR

Per Net Ton

Domestic washed gravel, 85-5, f.o.b. Kentucky and Illinois mines, all rail	\$18.00
Domestic, f.o.b. Ohio River landing barges	18.00
No. 2 lump, 85-5, f.o.b. Kentucky and Ill. mines	\$18.00 to 19.00
Foreign, 55% calcium fluoride, not over 5% silicon, c.i.f. Atlantic ports, duty paid	24.50
Domestic No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2½% silicon f.o.b. Illinois and Kentucky mines	31.50

FUEL OIL

Per Gal.

No. 2 or diesel, f.o.b. Bayonne	4.00c.
No. 6, f.o.b. Bayonne	2.26c.
Del'd Chicago, No. 5 Bur. Stds.	3.25c.
Del'd Chicago, No. 6 Bur. Stds.	2.75c.
Del'd Cleve'd, No. 3 distillate	5.50c.
Del'd Cleve'd, No. 4 industrial	5.00c.
Del'd Cleve'd, No. 5 industrial	3.25c.
Del'd Cleve'd, No. 6 industrial	3.00c.

COKE

Per Net Ton

Furnace, f.o.b. Connells-ville, Prompt	\$3.75
Foundry, f.o.b. Connells-ville, Prompt	\$4.75 to 5.50
Foundry, by-product, Chicago ovens	10.25
Foundry, by-product, del'd New England	12.50
Foundry, by-product, del'd Newark or Jersey City	10.88 to 11.40
Foundry, by-product, Philadelphia	10.95
Foundry, by-product, delivered Cleveland	10.30
Foundry, by-product, delivered Cincinnati	9.75
Foundry, Birmingham	7.50
Foundry, by-product, del'd St. Louis industrial district	10.75 to 11.00
Foundry, from Birmingham, f.o.b. cars dock, Pacific ports	14.75

FABRICATED STEEL

AWARDS NORTH ATLANTIC STATES

- 450 Tons, Washington, Banneker Junior High School, to Fort Pitt Bridge Works Co., Pittsburgh, through Bahen & Wright.
- 360 Tons, Queens, N. Y., Borden Avenue grade separation, to Harris Structural Steel Co., Plainfield, N. J.
- 180 Tons, Fort Ethan Allen, Vt., garages, to United Structural Steel Co., Worcester, Mass.
- 165 Tons, Old Greenwich, Conn., Electrolux factory, to Lehigh Structural Steel Co., Allentown, Pa.; J. L. Duge & Sons, contractors.
- 130 Tons, New York, steel curbing, to American Bridge Co. Pittsburgh.
- 125 Tons, Brighton, Mass., marine hospital, to Eastern Bridge & Structural Co., Worcester, Mass.
- 125 Tons, Wallingford, Conn., Quinnipiac River bridge, to American Bridge Co., Pittsburgh.
- 110 Tons, Greenwich, Conn., addition to Hamilton Avenue School, to an unnamed bidder.
- 110 Tons, Hunter, Pa., service building for United States Engineers at Tionesta Dam, to American Bridge Co., Pittsburgh.
- 110 Tons, Trenton, N. J., school to Park Iron Works, Bradley Beach, N. J.

THE SOUTH

- 290 Tons, Fort Knox, Ky., War Department, to Bedford Foundry & Machine Co., Bedford, Ind.
- 250 Tons, Richmond, Va., plant addition for E. I. du Pont de Nemours, to Bethlehem Steel Co., Bethlehem, Pa.
- 210 Tons, Norfolk, Va., gate for Navy Yard, to Virginia Bridge Co., Roanoke, Va.
- 150 Tons, Chickamauga Dam, Tenn., power house substructure for TVA, to Bethlehem Steel Co., Bethlehem, Pa.
- 140 Tons, Port Everglades, Fla., warehouse unit, to Tampa Shipbuilding Co., Tampa, Fla.

CENTRAL STATES

- 2065 Tons, Des Moines, Iowa, office building for Bankers Life Co., to Pittsburgh-Des Moines Steel Co., Pittsburgh, through Tinsley, McBroom & Higgins.
- 1655 Tons, Rantoul, Ill., two hangars at Chanute Field, to American Bridge Co., Pittsburgh, through J. L. Simmons Co.
- 530 Tons, Savanna, Ill., smokeless powder storage magazines, to Worden-Allen Co., Milwaukee, through Permanent Construction Co.
- 500 Tons, Detroit, factory building for Carholoy Co., to Fort Pitt Bridge Works Co., Pittsburgh, through O. W. Burke Co.
- 370 Tons, Brighton, Ohio, railroad viaduct, to American Bridge Co., Pittsburgh.
- 275 Tons, Washington, Iowa, underpass and pump station, to Bethlehem Steel Co., Bethlehem, Pa.
- 205 Tons, Dayton, Ohio, Veterans' building, to Ingalls Iron Works Co., Birmingham, through N. P. Severin Co., Chicago.
- 145 Tons, Springfield, Ohio, Y.M.C.A. building, to Ingalls Iron Works Co., Birmingham, through C. R. Weyermouth.
- 130 Tons, Rockford, Ill., factory addition, to Joseph T. Ryerson & Son, Inc., Chicago.
- 120 Tons, Lincoln, Neb., building addition, to Omaha Steel Works, Omaha, Neb.
- 110 Tons, Manitowoc County, Wis., bridge, to Lakeside Bridge Co., Milwaukee.

WESTERN STATES

- 503 Tons, Los Angeles, aircraft storage warehouse, to Minneapolis-Moline Power

Implement Co., Minneapolis, through B. O. Larson.

- 300 Tons, Los Angeles, grandstand extension at Santa Anita racetrack, to Columbia Steel Co., San Francisco.
- 295 Tons, Cathlamet, Wash., approach to Puget Island bridge, to Pool & McGonigle, Inc., Portland, Ore., by Parker-Schram Co., Portland, general contractor.
- 139 Tons, Lompoc, Cal., Santa Ynez River bridge, to Consolidated Steel Co., Los Angeles.
- 120 Tons, San Diego, extension to building No. 31, to Pacific Iron & Steel Co., Ltd., Los Angeles, through M. H. Golden.
- 115 Tons, Walden, Colo., highway bridge, to Minneapolis-Moline Power Implement Co., Minneapolis.

NEW STRUCTURAL STEEL PROJECTS NORTH ATLANTIC STATES

- 1800 Tons, Pike County, Pa., Orange County, N. Y., bridge.
- 715 Tons, Valley Falls, N. Y., highway project No. PSC 7290-8520, Fitzgerald Bros. Construction Co., Inc., Troy, N. Y., low bidder.
- 700 Tons, Dallastown, Pa., highway project; G. A. & F. M. Wagner, Inc., low bidder.
- 660 Tons, New York, garage and office building, for Sheffield Farms Co.
- 600 Tons, Bergen, N. Y., State bridge.
- 540 Tons, Monroe County, N. Y., grade separation project No. RC 3983; bids taken Aug. 16.
- 500 Tons, Queens, N. Y., contract No. 6, grade crossing elimination, for New York City Parkway Authority.
- 400 Tons, Sharon, Pa., warehouse building, for Westinghouse Electric & Mfg. Co.
- 318 Tons, Lisle, N. Y., highway project No. RC 3980, Strong Construction Co., Whitney Point, N. Y., low bidder.
- 300 Tons, Medford, Mass., high school.
- 300 Tons, Long Island City, N. Y., mill building, for Steel & Sons.
- 250 Tons, Greenwood, N. Y., State bridge.
- 250 Tons, Pittsburgh, Arsenal Elementary School.
- 225 Tons, Reading, Pa., post office.
- 180 Tons, Cumberland County, Pa., beam bridge; bids by State Authority.
- 180 Tons, Tewksbury, Mass., bridge over Boston & Maine Railroad.
- 175 Tons, Mattawamkeag, Me., power house, for Great Northern Paper Co.
- 160 Tons, Clearfield County, Pa., State bridge.
- 150 Tons, Hillsdale, N. J., building for Mundet Cork Corp.
- 145 Tons, Woodstock, Vt., State bridge.
- 125 Tons, New Brunswick, N. J., building for J. J. Newberry Co.
- 125 Tons, New York, addition to Public School No. 60 in Bronx.

THE SOUTH

- 1200 Tons, Houston, Tex., addition to Chamber of Commerce building.
- 1200 Tons, Durham, N. C., addition to Navy Department building; W. Muirhead Construction Co., Durham, N. C., low bidder.

CENTRAL STATES

- 14,085 Tons, including 4590 tons of silicon steel, bridge across Mississippi River from East St. Louis, Ill., to St. Louis; general contract awarded to G. L. Tarlton Construction Co., St. Louis, subject to PWA approval.
- 1500 Tons, Belleville, Ill., hangar, Scott Field; bids Aug. 22.
- 1200 Tons, Greene County, Ind., bridge No. 1673-B.

1056 Tons, State of Wisconsin, 11 bridges; bids Aug. 23.

654 Tons, State of Illinois, highway bridge projects; low bidders as follows: 222 tons, Fort Pitt Bridge Works Co., Pittsburgh; 250 tons, Stupp Bros. Bridge & Iron Co., St. Louis; 182 tons, St. Louis Structural Steel Co., East St. Louis, Ill.

415 Tons, Chicago, East Monroe Street bridges.

250 Tons, Mitchell, Ill., bridge.

240 Tons, Danville, Ill., coach shop for Chicago & Eastern Illinois Railway Co.

150 Tons, Chippewa Falls, Wis., Central Street bridge.

150 Tons, Marseilles, Ill., beam spans for Rock Island Railroad.

WESTERN STATES

5487 Tons, structural and reinforcing steel, Prado Dam on Santa Ana River; bids to be taken Sept. 15 by United States Engineer, Los Angeles. About 270 tons of miscellaneous metal is also involved.

4300 Tons, Fort Lewis, Wash., four hangars at McChord Field.

1300 Tons, Oakland-Alameda, Cal., bascule bridge over Tidal Canal.

1000 Tons, Denver, hangar for Army; bids Aug. 23.

220 Tons, Los Angeles, race track clubhouse.

182 Tons, Idaho County, Idaho, forest highway bridges for Bureau of Public Roads, Ogden, Utah; bids Aug. 16 and Aug. 19.

175 Tons, Durango, Colo., Animas River bridge.

175 Tons, Crownover, Wash., bridges, Roza Dam.

153 Tons, Boulder, Colo., Boulder Creek, State highway bridge; bids Aug. 23.

FABRICATED PLATES

AWARDS

- 1386 Tons, California, six oil storage tanks for 11th Naval District, to Chicago Bridge & Iron Works, Chicago.
- 955 Tons, Batavia, N. Y., 1,500,000-gal. elevated tank, to Pittsburgh-Des Moines Steel Co., Pittsburgh.
- 750 Tons, Wawarsing, N. Y., Lackawack Dam, to Sharon Stamping Co., through B. Perini & Sons.
- 700 Tons, penstocks for Hiwassee Dam, Turtletown, Tenn., to Chicago Bridge & Iron Works, Chicago.
- 535 Tons, Fondren, Tex., tank repairs for Humble Pipe Line Co., to Pittsburgh-Des Moines Steel Co., Pittsburgh.
- 275 Tons, Bingham, Me., roller and sluice gates for Central Maine Power Co., to Phillips & Davies.
- 228 Tons, Brownwood, Tex., two 1,000,000-gal. tanks, to Kansas City Bridge Co., Kansas City.
- 148 Tons, Los Angeles, for United States Engineer, to Bethlehem Steel Co., Los Angeles.
- 140 Tons, Sandwich, Mass., oil tanks, to Chicago Bridge & Iron Works, Boston.

NEW PROJECTS

3000 Tons, San Diego, Cal., Navy fleet moorings, Southwest Welding & Mfg. Co., Alhambra, Cal., low bidder on general contract.

172 Tons, Los Angeles, tunnel lining, Specifications 3797 and 3798; Truscon Steel Co., Los Angeles, low bidder.

SHEET PILING

AWARDS

- 145 Tons, Calexico, Cal., All American Canal, Invitation B42086, to Inland Steel Co., Chicago.
- 128 Tons, Knob, Cal., All American Canal, Invitation B42081A, to Carnegie-Illinois Steel Corp., Pittsburgh.

NEW PROJECTS

120 Tons, Erie, Pa., Coast Guard Station; Great Lakes Dredge and Dock Co., Cleveland, Ohio, low bidder.

PLANT EXPANSION AND EQUIPMENT BUYING

◀ NORTH ATLANTIC ▶

American Cystoscope Makers, Inc., 450 Whittick Avenue, Bronx, New York, manufacturer of optical, surgical and electrical instruments and parts, has leased two-story industrial building at 1241 Lafayette Avenue, Bronx, and will improve and equip for new plant. Present works will be removed to new location and capacity increased. Rodgers Associates, 730 Fifth Avenue, are engineers for layout, design and equipment installation.

Commanding Officer, Ordnance Department, Watervliet Arsenal, Watervliet, N. Y., asks bids until Sept. 7 for one thread milling machine, complete with equipment and tools (Circular 13).

American Viscose Corp., 200 Madison Avenue, New York, has approved plans for addition to branch mill at Nitro, W. Va., to double present capacity. It will comprise several one-story units, equipped for capacity of 20,000,000 lb. viscose rayon per annum, with facilities for employment of about 200 additional persons. Cost over \$1,000,000 with machinery. W. A. B. Vivian is manager of mill at Nitro.

R. Steel & Sons, 41-25 Vernon Boulevard, Long Island City, manufacturers of machine specialties and parts, forgings, etc., have taken out a permit for another building at new plant site at Bridge Plaza South and Ninth Street, supplementing a one-story machine shop, for which plans were filed recently. New unit will be two-story, 200 x 245 ft., equipped as a forge and machine shop. Cost close to \$100,000 with equipment. Roger Garland, 10 East Fortieth Street, New York, is architect.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Aug. 26 for one motor-driven milling machine (Schedule 4191) for Brooklyn Navy Yard; for quantity of floor-type, double-emery grinders, with drill-grinding attachments, equipment, spare parts, tools and wrenches (Schedule 4185) for Brooklyn and Philadelphia yards; until Sept. 2 for quantity of pressure and radiator valves (Schedule 4195) for Brooklyn and Sewall's Point yards.

Claude Neon Lights, Inc., 41 East Forty-second Street, New York, manufacturer of electric signs and displays, has leased one-story industrial building on Thirty-third Street, near Thirty-sixth Avenue, Long Island City, and will use in conjunction with present plant at 36-08 Thirty-third Street, Long Island City.

Calvert Distillers Corp., 405 Lexington Avenue, New York, is considering new rectifying and mechanical-bottling plant on Pacific Coast, with site to be selected at early date, reported in vicinity of San Francisco. Cost over \$100,000 with equipment. At later date it is proposed to construct a distillery at same location. W. W. Wachtel is president.

Frederick Russell, Long Island City, care of Arthur F. Crowley, 47-17 Fifth Street, Long Island City, architect, has filed plans for new one-story machine shop, 25 x 100 ft., at Fifth Street and Forty-seventh Road. Cost close to \$35,000 with equipment.

New York & Queens Electric Light & Power Co., 28-19 Bridge Plaza, Long Island City, is arranging fund of about \$875,000 through sale of preferred stock, proceeds to be used for expansion and improvements in power plant, power substations, transmission and distributing lines. Permission has been granted.

Somerset County Board of Education, Somerville, N. J., plans new two-story vocational training school, with number of shop units for different mechanical trades. Cost about \$300,000. Financing in part is being arranged through Federal aid.

Commanding Officer, Ordnance Department, Picatinny Arsenal, near Dover, N. J., asks

bids until Aug. 22 for five air compressors (Circular 69), quantity of mechanical dippers (Circular 1110), 10,000 lb. of steel grit (Circular 88), 500 wire brushes (Circular 87), 100,000 springs for igniting hand grenade fuse (Circular 85); until Aug. 25 for one automatic machine for blanking and assembling disk to lower detonator retainer (Circular 67); until Aug. 31 for one inspection equipment unit, horizontal stationary type (Circular 71) for reworking 189,724 lb. of shells, projectiles, etc. (Circular 72).

Wright Aeronautical Corp., 1120 East Nineteenth Street, Paterson, N. J., has leased portion of property of Morrison Machine Co., Madison and Getty Avenues, about 39,000 sq. ft. of floor space, in vicinity of plant at first noted location, and will equip for machine shop for machining crankshafts and kindred operations.

United States Engineer Office, Custom House, Philadelphia, asks bids until Aug. 22 for one forged steel propeller shaft, one bronze forward-shaft sleeve and one bronze after-shaft sleeve (Circular 43).

Benjamin Franklin Paint & Varnish Co., 4820 Langdon Street, Philadelphia, has asked bids on general contract for multi-story addition to plant. Cost over \$75,000 with equipment. Company is a subsidiary of Sears, Roebuck & Co., Chicago.

Commanding Officer, Ordnance Department, Frankford Arsenal, Philadelphia, asks bids until Aug. 22 for two conveyors for small arms ammunition depot annealing room (Circular 57); until Aug. 23 for six concentricity gages (Circular 79).

◀ BUFFALO DISTRICT ▶

Board of Education, Newark, N. Y., plans manual training department in new three-story junior and senior high school, for which bids will be asked soon on general contract. Cost about \$650,000. Financing has been arranged through Federal aid. Carl C. Ade, 52 St. James Street, Rochester, N. Y., is architect and engineer.

Gordon Baking Co., 2303 East Vernor Street, Detroit, has approved plans for one-story milk processing and condensing plant in vicinity of Summit and Wilson Streets, Salamanca, N. Y., 60 x 180 ft., with four-story section in center for water tanks and other equipment. Cost close to \$75,000 with equipment.

Sinclair Refining Co., Wellsville, N. Y., is awarding a number of separate contracts for rebuilding of portion of local oil refining plant recently destroyed by fire with loss of about \$1,000,000 and will proceed with work at once. Main offices of company are at 630 Fifth Avenue, New York.

◀ NEW ENGLAND ▶

City Council, New London, Conn., plans one-story mechanical shop, equipment storage service and garage building on Trumbull Street, with facilities for municipal motor trucks, automobiles and automotive road equipment, as well as meter repair and maintenance shop for water department and other divisions. Cost over \$150,000, of which about \$70,000 will be represented by a Federal grant.

Electrolux, Inc., Forest Avenue, Greenwich, Conn., has asked bids on general contract for one-story addition. Cost close to \$50,000 with equipment. Executive offices are at 500 Fifth Avenue, New York.

Commanding Officer, Ordnance Department, Springfield Armory, Springfield, Mass., asks bids until Sept. 9 for one hand-operated portable crane, telescopic type, revolving base (Circular 27).

Chapman Valve Mfg. Co., Hampshire Street, Indian Orchard, Mass., manufacturer of Leavy

gate valves and other valves and engineering specialties, has let general contract to Stone & Webster Engineering Corp., 49 Federal Street, Boston, for one-story addition, 50 x 140 ft. Cost over \$75,000 with equipment.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Aug. 23 for one electric resistance furnace (Schedule 4165) for Boston Navy Yard.

◀ WASHINGTON DIST. ▶

General Purchasing Officer, Panama Canal, Washington, asks bids until Aug. 29 for four two-ton chain hoists, 42,000 ft. of wire rope, quantity of galvanized iron or steel seizing strand, soft steel wire, brass pipe, copper pipe, wire screen cloth, 30,000 lb. of common steel wire nails, two trench pumps and other equipment (Schedule 3375).

Board of District Commissioners, District Building, Washington, plans manual training department in new multi-story Calvin Coolidge high school at Fifth and Sheridan Streets, N.W., for which bids are being asked on general contract until Sept. 13. Fund of \$1,310,000 has been arranged for structure.

Wilson Welder & Metals Co., Inc., 60 East Forty-second Street, New York, has asked bids on general contract for new one-story plant in Sparrows Point district, Baltimore, 100 x 400 ft. Cost close to \$100,000 with equipment. Company is a subsidiary of Air Reduction Sales Co., first noted address.

Board of Trustees, Piedmont Sanatorium, Burkesville, Va., will take bids soon for new power house and pumping plant at institution. Cost about \$70,000. Fund of \$171,000 has been arranged through Federal aid for this and other buildings.

Board of Education, Charlottesville, Va., will take bids soon for one-story machine shop and two-story equipment storage, service and garage building. Cost close to \$225,000, of which \$103,334 has been secured through Federal grant.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Aug. 23 for one motor-driven precision tool room lathe and equipment (Schedule 4158) for Anacostia, D. C.; two motor-driven engine lathes (Schedule 4145), two motor-driven engine lathes (Schedule 4147) for White Plains Station; one motor-driven selective head engine lathe (Schedule 4111), quantity of steel forgings (Schedule 4113), quantity of copper-nickel alloy tubing (Schedule 4124); until Aug. 26 for 69 aircraft propeller governor units and 69 sets of aircraft engine parts (Schedule 900-1990), quantity of steam windlasses and spare parts (Schedule 4131); until Aug. 30 for quantity of thermostatic-controlled valves (Schedule 4183), two motor-driven engine lathes (Schedule 4150) for Eastern and Western Navy Yards.

◀ SOUTH ATLANTIC ▶

Constructing Quartermaster, Fort Montrie, S. C., asks bids until Aug. 24 for furnishing and installing stoker units (Circular 5247-5).

City Council, Clearwater, Fla., plans new municipal electric power plant and electrical distributing system. Cost about \$400,000 and \$230,000 in order noted. Financing has been arranged through Federal aid.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Aug. 26 for quantity of spare parts for airplanes (Schedule 900-1992) for naval air station, Pensacola, Fla.

United States Engineer Office, Charleston, S. C., asks bids until Aug. 23 for quantity of miscellaneous pump parts and cutter-head bushings (Circular 15).

◀ SOUTH CENTRAL ▶

Alabama State Docks Commission, Mobile, Ala., plans extensions and improvements in bulk material-handling facilities at local port, including new one-story storage and distributing building, loading and unloading equipment, conveyor belts, elevating and other mechanical-handling equipment. Fund of \$300,000 has been arranged through Federal aid.

Grocers' Baking Co., 1455 South Seventh Street, Louisville, will take bids soon for

one and two-story addition to branch baking plant at West Sixth and Jefferson Streets, Lexington, Ky., 76 x 140 ft., and 45 x 139 ft., respectively. Cost over \$75,000 with oven units, mechanical-handling and other equipment. H. A. Churchill & Associates, Citizens' Bank Building, Lexington, are architects.

Italian-American Mfg. Co., Birmingham, care of Dominick Simonetti, 1601 Bush Boulevard, president, recently organized to manufacture food products, has leased local building at 2101 Morris Avenue, and will occupy for plant. Equipment installation will cost over \$75,000. Plant will be ready for operation early in fall.

City Council, Rayne, La., plans extensions and improvements in municipal electric power plant and waterworks station, including installation of additional equipment. Cost close to \$85,000. Financing has been arranged through Federal aid.

◀ SOUTHWEST ▶

Board of Education, Library Building, Kansas City, Kan., plans manual training department in new three-story and basement Sumner high school at Eighth and Oakland Streets, for which bids are being asked on general contract. Cost about \$750,000. Plans will be drawn soon for new vocational shop building at Northwest junior high school, Eighteenth and Haskell Streets. Cost over \$70,000 with equipment. Financing has been arranged through Federal aid. Joseph W. Radotinsky, Commercial National Bank Building, is architect for both structures.

United States Engineer Office, Court and Custom House, St. Louis, asks bids until Aug. 31 for power, control and lighting system at Lock and Dam No. 25, Mississippi River, including feeder lines, transformers, switches, portable lighting units, electric tow-haulage units, standby electric power station, control equipment and complete auxiliaries.

City Council, Cleveland, Okla., plans new municipal electric power plant, using diesel engine generating units and accessories. Also electrical distributing system. Cost close to \$140,000. Financing has been arranged through Federal aid.

Galveston County Common School District No. 7, Dickinson, Tex., E. Martin Belcher, superintendent, will install manual training department in new two-story high school, for which bids will be asked soon on general contract. Cost about \$175,000. Financing is being arranged through bond issue and Federal aid.

Chipman Chemical Co., Inc., 401 Yale Street, Houston, Tex., manufacturer of industrial chemicals, plans new sulphur grinding plant on site now being selected. It will consist of several one-story operating units, with machine shop, power house and other mechanical departments. Cost close to \$200,000 with machinery.

City Council, Wharton, Tex., plans municipal electric power plant, with diesel engine generating units and auxiliary equipment. Also new electrical distributing system. Cost about \$200,000. Financing has been arranged through Federal aid.

◀ WESTERN PA. DIST. ▶

United States Engineer Office, New Post Office Building, Pittsburgh, asks bids until Aug. 22 for four units of sluice gate-hoisting machinery, one lifting beam, 24 masonry plates, dowel pins, etc., for Crooked Creek dam; also for four units of sluice gate-hoisting machinery, one lifting beam and auxiliary equipment for Tionesta dam (Circular 59); until Sept. 1 for two service water supply pumps and two sump pumps (Circular 47).

Contracting Officer, Quartermaster Corps, Charleston, W. Va., asks bids until Aug. 22 for quantity of tools and tool kits (Circular 5505-3).

◀ OHIO AND INDIANA ▶

Board of Trustees, Case School of Applied Science, Euclid Avenue and Wade Park, Cleveland, plans mechanical repair shop and other mechanical facilities in new two and three-

story laboratory building on campus. Bids will be asked soon on general contract. Cost close to \$500,000 with equipment. Walker & Weeks, 2341 Carnegie Avenue, are architects.

Shacomax Corp., Massillon, Ohio, recently organized by H. R. Maxson, president, Tyson Roller Bearing Corp., Massillon, and associates, has acquired local one-story industrial building formerly used by Reynolds Mfg. Co., and will occupy for new plant for production of special and standard aircraft instruments and other precision equipment for W. L. Maxson Corp., 460 West Thirty-fourth Street, New York. New plant will be equipped for operation early in fall.

City Council, Martins Ferry, Ohio, plans extensions and improvements in municipal electric power plant and waterworks station, including installation of additional equipment. Cost over \$75,000. Financing will be arranged through Federal aid. Burns & McDonnell Engineering Co., 107 West Linwood Boulevard, Kansas City, Mo., is consulting engineer.

Contracting Officer, Materiel Division, Air Corps, Wright Field, Dayton, Ohio, asks bids until Aug. 23 for one electric-operated tube and fitting machine (Circular 61); until Aug. 24 for quantity of wind direction indicator assemblies (Circular 53), two milling machines, one vertical milling and die-sinking machine, one plating barrel, one stand assembly, one sheet metal brake and two wire cutters, and one motor-driven plate assembly, etc. (Circular 66), quantity of hand tool benders and flaring tools, and three stands (Circular 69); until Sept. 1 for cylinder and valve assembly, valve control brackets, control cable bracket clamps, tube assembly, holder assembly, corner pulleys, plugs and other equipment (Circular 60).

Emge Packing Co., Fort Branch, Ind., meat packer, has asked bids on general contract for three-story and basement addition. Cost over \$65,000 with equipment.

Board of School Commissioners, Administration Building, 150 North Meridian Street, Indianapolis, plans addition to Arsenal Technical High School, East Michigan Street. Cost about \$750,000. Financing is being arranged through Federal aid. A. B. Good is business director.

◀ MICHIGAN DISTRICT ▶

Carboloy Co., Inc., 2985 East Jefferson Street, Detroit, has asked bids on general contract for new plant on tract of land recently acquired on Eight-Mile Road, near line of Grand Trunk Railway, comprising main one-story shop unit, administration building and auxiliary structures. Cost over \$500,000 with equipment. Smith, Hinchman & Grylls, Inc., Marquette Building, is architect and engineer.

Sparta Foundry Co., Sparta, Mich., affiliated with Muskegon Piston Ring Co., Muskegon, Mich., plans one-story foundry addition. Cost close to \$40,000 with equipment. Weemhoff & Steketee, Grand Rapids, Mich., are architects.

Dustex Corp., Jackson, Mich., recently organized by Maxwell F. Badgley, Jackson, and associates, to manufacture vacuum cleaners and parts, air purifiers and kindred equipment, has leased space in local building of Acme Industries and will equip for new plant. Production is scheduled to begin early in fall.

◀ MIDDLE WEST ▶

Philo Radio & Television Corp., Tioga and C Streets, Philadelphia, manufacturer of radio equipment and parts, television apparatus, etc., has leased one and two-story industrial building at 1238 North Kostner Avenue, Chicago, totaling 40,000 sq. ft. of floor space, and will occupy for new factory branch, storage and distributing plant. Chicago offices of company are at 140 South Dearborn Street.

United States Engineer Office, Post Office Building, Chicago, asks bids until Aug. 29 for five sets of tow-haulage equipment for five locks (Circular 11).

Commanding Officer, Ordnance Department, Rock Island Arsenal, Rock Island, Ill., asks bids until Aug. 23 for quantity of towing

cable and wire rope (Circular 68); until Aug. 24 for quantity of malleable iron castings (Circular 108), quantity of cable terminals, battery terminals, steel lock nuts, cable, soldering lugs and other equipment (Circular 107), quantity of wrenches, brake drums, hubs, etc. (Circular 112), two boiler meters (Circular 106), quantity of ground and lapped gages, including thread, plain plug, snap, etc. (Circular 116), quantity of seamless steel tubing (Circular 103); until Aug. 26 for nine bomb trailers (Circular 99), three light wheeled-type tractors (Circular 97).

City Council, Sherburn, Minn., plans new municipal electric power plant, including engine-generator units, boilers and auxiliary equipment. Cost about \$112,000. Financing is being arranged through Federal aid. Ralph D. Thomas & Associates, 1200 Second Avenue South, Minneapolis, Minn., are consulting engineers.

Bureau of Reclamation, Denver, Colo., asks bids until Aug. 25 for two 26 ft. x 28 ft. bulkhead gates for installation in inlet ends of diversion conduits at Marshall Ford Dam, Colorado River project, Tex. Equipment will be installed by Government (Specifications 1110-D).

Atchison, Topeka & Santa Fe Railway, 80 East Jackson Boulevard, Chicago, has plans for one-story shop at division yards, Eighteenth Street and Wentworth Avenue, to be equipped for repair and maintenance of diesel-type locomotives. Cost over \$65,000 with equipment.

United States Engineer Office, Fort Peck, Mont., asks bids until Sept. 6 for prefabricated sections for all-welded steel hulls for one utility barge and one derrick boat (Circular 33).

◀ PACIFIC COAST ▶

Bureau of Yards and Docks, Navy Department, Washington, has let general contracts to B. O. Larsen, 1340 E Street, San Diego, Cal., for three-story general storehouse and equipment building, 115 x 205 ft., at Naval Air Station, operating base, San Diego, at \$184,600, exclusive of equipment (Specifications 8870); for one-story naval storehouse and equipment building, 121 x 305 ft., same station, at \$103,000, exclusive of equipment (Specifications 8871); and for one-story addition, about 40,000 sq. ft. of floor space, for South extension to final assembly shop, same naval base, at \$129,600, exclusive of equipment.

Allis-Chalmers Mfg. Co., Milwaukee, has acquired machinery and equipment and other property of Brennels Mfg. Co., Oxnard, Cal., manufacturer of deep tillage tools and equipment for dry farming and orchard land service. Company will operate in future as an associated interest and has arranged for lease of Oxnard plant for continuance of production at that place. Expansion is planned at later date.

Lockheed Aircraft Corp., 1705 Victory Place, Burbank, Cal., manufacturer of large cabin planes and other aircraft and parts, has let contract to Consolidated Steel Corp., Ltd., 5700 South Eastern Avenue, Los Angeles, for one-story addition, 140 x 320 ft., for expansion in assembling department. Cost about \$150,000 with equipment. John and Donald B. Parkinson, Title Insurance Building, Los Angeles, are architects.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Aug. 30 for 500 hand-operated portable spray pumps (Schedule 4172), one gasoline engine-driven tractor (Schedule 4179), one motor-driven press brake (Schedule 4181) for Mare Island, Cal., Navy Yard; until Sept. 2 for one motor-driven woodworking band saw (Schedule 4199) for San Diego, Cal., Naval Air Station.

United States Engineer Office, Bonneville, Ore., asks bids until Sept. 13 for two 74,000-hp., hydraulic turbines, with control gates and stems, gate stem levers, two draft tube liners, two throat rings, two speed rings, two pit liners and complete auxiliary equipment for Bonneville hydroelectric generating plant (Circular 13).

THIS WEEK'S MACHINE ...TOOL ACTIVITIES...

*... July machine tool orders gain 28 per cent over June
... Much better tone seen in present domestic inquiries.*

Report Large Canadian Business in Sight

DETROIT—While automotive machine tool activity continues at very low ebb, news comes from across the Canadian border that the John Ingalls Co. of Toronto is to purchase several hundred lathes and milling machines for munitions work.

Industrial Equipment Makers Begin Buying Again

NEW YORK—One of the leading industrial equipment manufacturers in the East bought four small machine tools last week, the first purchase of this kind in 1938. In an ordinary year this particular company would be in the market every week. The Lehigh Valley bought a car wheel lathe and has another machine up for consideration. This action is another milestone, since no eastern road had bought any shop equipment this year up to now. Another significant purchase was made by a heavy industrial machinery maker who had not bought machinery for years. These spotty purchases, plus active inquiries from railroad equipment builders and other strictly industrial firms, indicate that the log jam has probably been broken. Of course, there is yet to be placed a lot of Army and Navy business, and firms with Government contracts continue to be active buyers. Wright Aeronautical Corp., for example, the most active purchaser in this area, recently leased additional space in an adjoining factory to take care of its production overflow. While none of the orders mentioned bulks large, they do represent a reversal in trend and together with the better tone of inquiries presage better business ahead.

Orders Off Slightly, but Inquiries Are Better

CINCINNATI—While the general machinery average shows a small downward deflection, a renewal of drill ordering the past week and some improvement in domestic interest added new optimistic features to the market. Manufacturers of upright and radial drills report foreign demand, thus breaking the several months' quiet in this quarter. Lathes were quieter than the preceding week, but orders of several units were reported. The bulk of this business, however, was from domestic sources and tended to confirm builders' heretofore optimistic predictions. Heavy tools were quiet, but manufacturers report sufficient backlog to sustain plant operations near to 60 per cent for the remainder of the year.

Inquiry is still active, and the trade indicates a more sincere tone is apparent.

Orders Somewhat Better; Inquiries on the Increase

CHICAGO—A smattering of business has been placed here of late, mainly from John Deere, Studebaker and general sources. Buying for the new Australian plant of the Harvester company is expected soon. One seller had a worse July than June, but reports a slight increase in small tool demand at the present time. In the current situation chief cause for better feeling is the number of inquiries and a wider customer distribution.

Machine Tool Orders Rose 28% in July

MACHINE tool orders rose 28 per cent in July over June, largely due to a rapid rise in foreign orders. The combined index computed by the National Machine Tool Builders' Association rose from 70.2 in June to 89.6 in July, or 19.4 points. In July, 1937, the combined index stood at 171.1. The current figure is in line with the index prevailing in April (90.3).

The index of foreign orders rose from 34.5 in June to 47.8 in July, a gain of 38 per cent, whereas the domestic order index increased only 17 per cent—from 35.7 to 41.8. Foreign orders in July accounted for 53.5 per cent of the total. The association reports that the spottiness that characterized the slightly improved June business was less pronounced in July.

..GREAT BRITAIN..

... British mills feeling decline in steel buying ... Export business dull ... American competition keen.

LONDON, Aug. 16 (By Cable).—It is generally recognized that there has been a sharp recession in British iron and steel trade and that an important revival is necessary to maintain the present rate of employment. Armament orders alone are insufficient to offset the industrial decline and scarcity of export business.

Some light steel makers report a little more interest and the heavy steel mills are still fairly busy, but the general outlook for the steel trade continues to cause anxiety.

Consumers complain that present steel prices are out of tune with industrial conditions and are awaiting reductions.

The North East Coast workers are now enjoying their annual holiday, but blast furnaces and coke ovens are working as usual. Demand for pig iron is at low ebb. This will mean a further accumulation of supplies.

The Continental steel market is dull. Many buyers are doubtful whether present prices will be maintained, American competition not diminishing. The Steel Cartel may reopen discussions in six weeks with American companies and other outsiders. It is proposed that export quotas be allotted to outsiders.

British tin plate orders latterly have balanced output, leaving the total volume of unfilled orders around 2,250,000 base boxes. Consumers are showing continued preference for stock wasters and are looking for lower prices when steel quotations are eventually reduced. Meanwhile makers complain of not making profits.

Demand for galvanized sheets is still poor both at home and abroad.

...BOSTON...

... Pig iron sales in small lots.

BOSTON, Aug. 16.—Pig iron business is confined to an occasional 50-ton or smaller lot for prompt or nearby shipment. Most of the largest New England pig iron consumers so far have not taken advantage of the recent drop of \$4 a ton in the price. At their current rate of operation they have, in almost every instance, enough iron on hand for the remainder of this year or longer. The brightest spots in the foundry industry appear to be those making freezing equipment, stoves, soap manufacturing or other kinds of machinery.

For small lots of reinforcing steel there is quite an active market, but competition is very keen and the price structure is not as firm as it might be. Fabricating steel business is developing very slowly. A goodly percentage of the WPA money coming into New England does not concern fabricated steel.